

NORTEL
NORTHERN TELECOM

NORSTAR

NORSTAR HANDBOOK

POWER

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DIGITAL
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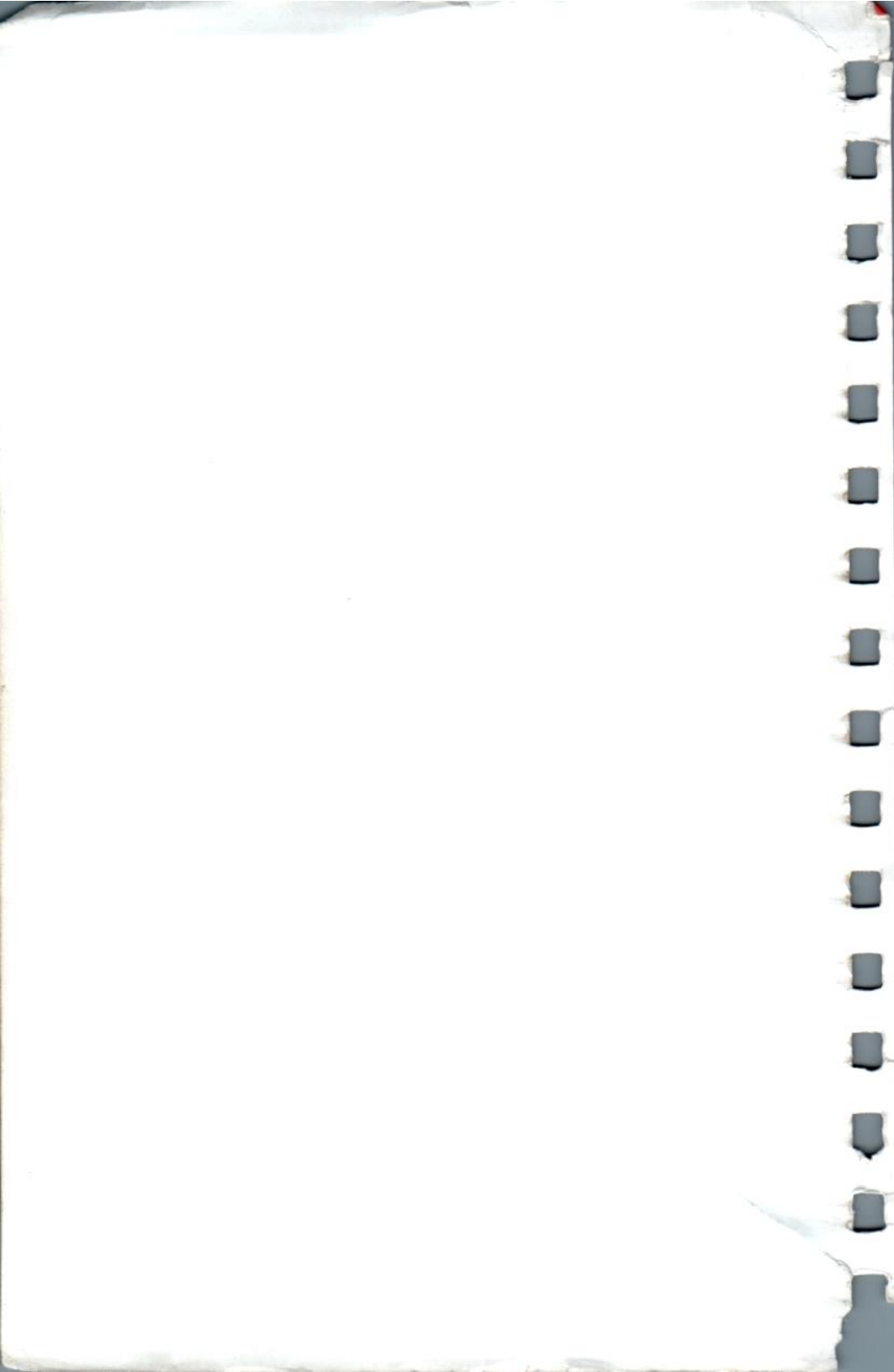
INTERNET/
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WIDE AREA
NETWORK



BUSINESS
RESULTS



The Norstar Handbook

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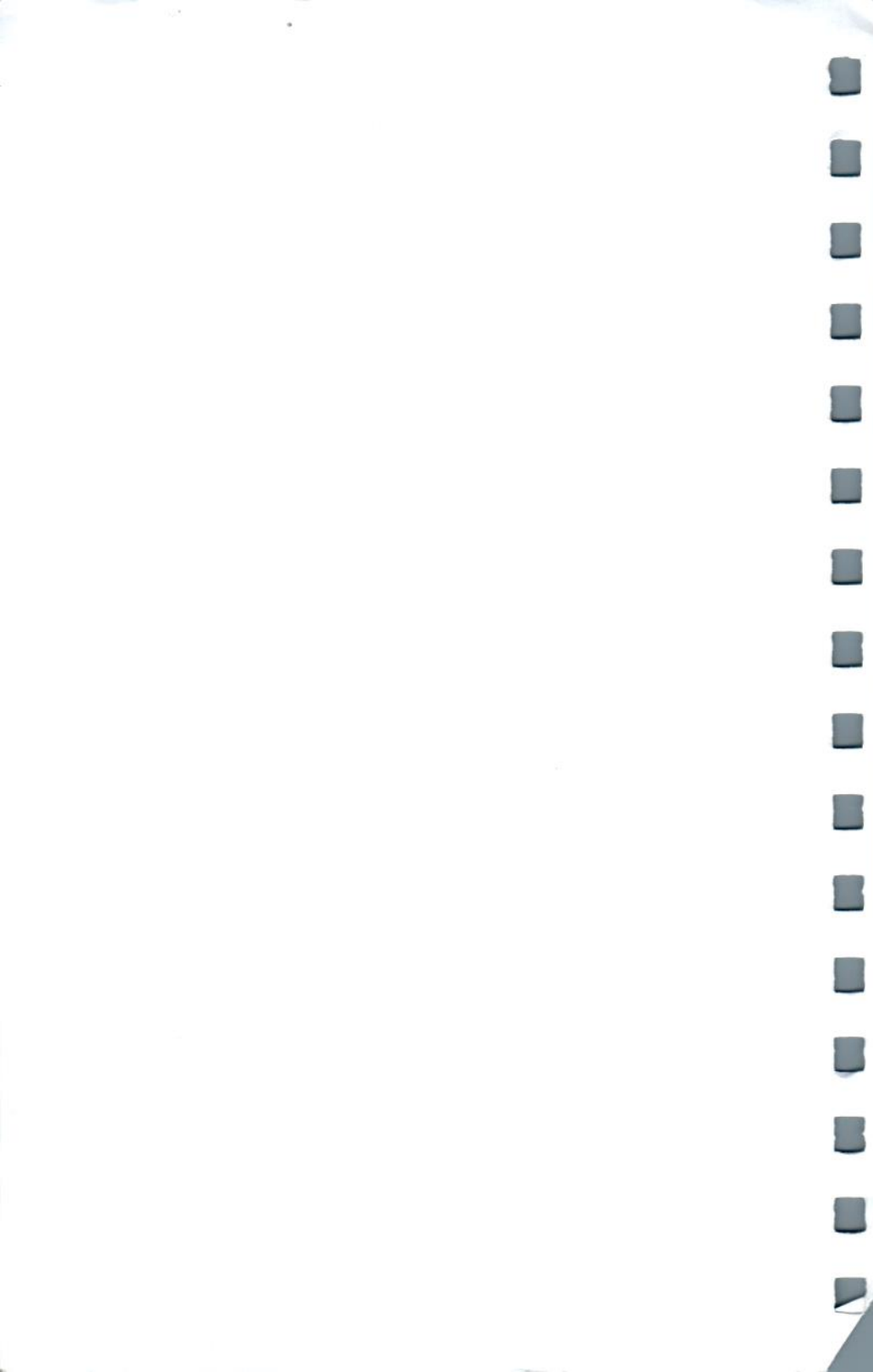
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In the U.S.: order through the Inside Sales Department, using standard ordering procedures for Norstar collaterals, or call 1-800-321-2649.

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Introduction

The *Norstar Handbook* is for anyone who sells the Norstar product portfolio in North America and wants a handy reference to its many features and advantages.

How to Get the Most from this Handbook

You won't need to read the chapters sequentially, or even the entire handbook. The content is organized so you can quickly find the most relevant section for a current project or a request for information. The information you find here should help to make your Norstar sales easier, quicker and more professional.

The *Norstar Handbook* is intended for reference purposes only. Please consult the latest Norstar Product Catalog or ordering source for detailed specifications and ordering information.

Norstar Overview

The Norstar target market is made up of single-site stand-alone businesses, multi-site businesses and franchises, as well as branch offices and departments within large organizations. In North America alone, this market accounts for 98% of all business locations and more than one-third of all business communications dollars.

Market studies indicate that:

- The decision to buy a telephone system is made every 5 to 7 years.

- Decisions are made quickly, based on the experience of the business with telephone systems and the reputation of the supplier.
- The needs of users vary greatly, as does their understanding of how a telephone system can improve their business.

Norstar provides complete, integrated communications solutions to power businesses. Digital switching, applications, mobility, and more—all working together, so building and using a communications systems is simple.

Since its introduction in 1988, Norstar has cost-effectively brought digital technology to the desktops of small businesses, ensured simplicity for the end user, and provided an architecture that allows new functionality and applications to be integrated into the system.

With nearly 8 million telephone sets in over 80 countries, Norstar has today become *the #1 small system for business communications in the world.*

Norstar Systems

Norstar Integrated communications Systems (ICS) are fully-digital platforms for merging communications of all types, right at your desktop. You start with the base system and add integrated Norstar Applications and other capabilities as the business needs them.

Combining the latest technological advances with LCD windows on every Norstar telephone, ICS systems provide powerful, yet friendly and intuitive business communications including functionality such as ISDN, Internet Access, and Integrated Voice Response.

There are three Norstar platforms to choose from: Norstar Modular ICS, Compact ICS, or 3x8 system, all of which can integrate business communications to make employees more productive, lower costs, and provide superior customer service. The size of a business and their business communications requirements determine the Norstar system that's right for them.

Norstar Modular ICS

The Norstar Modular ICS targets businesses which use over 20 telephones and require capabilities which allow for more power, more growth and more advanced applications. It can start as small as 4x32 (4 lines and 32 extensions). With XC software installed, Modular ICS capacity increases to

292 ports and supports Nortel Companion wireless for full roaming capability.

Norstar Compact ICS

The Norstar Compact ICS ranges in size from 4x8 (4 lines and 8 extensions) to as large as 16x24 (with Basic Rate Interface). The Compact ICS has been built to meet the existing telephony requirements of small businesses, and equip them for the additional step up into new technology. The resulting product is an exciting and simple solution which accommodates future growth, both in number of lines and the technology available to users.

Norstar 3x8

The simple, yet sophisticated, Norstar 3x8 system was designed specifically for small businesses. It is expandable up to 3 lines and 8 extensions, and offers a wide variety of features to manage communications and improve customer service.

Norstar Applications

Norstar Applications are designed specifically to integrate with the Norstar business communications systems to provide messaging, call management, faxing, e-mail, and much more. All Norstar Applications integrate seamlessly with Norstar systems, so they are easy to add as customers need them.

Messaging

Norstar Voice Mail

Norstar Voice Mail answers incoming calls and can take messages for everyone in the company—with complete accuracy—24 hours a day, 7 days a week. It improves efficiency by cutting down on “telephone tag” and freeing employees to concentrate on the work at hand, confident that they won’t miss a phone call. Norstar Voice Mail is a scaleable application that supports up to 1,000 mailboxes and up to 100 hours of total storage time for greetings and messages.

Norstar Dial-by-Name

Norstar Dial-by-Name is a time-saving business tool that turns the LCD window on a Norstar telephone into an electronic Rolodex with names, important details about those names, and automatic dialer, and access to multiple phone books. With a simple touch of a key, a user can quickly find and dial the number they're looking for.

Norstar Fax Messaging

Fully integrated with Norstar Voice Mail, Fax Messaging provides a new level of fax management that increases productivity by allowing a user to retrieve all of their messages with one call—anywhere there's a fax machine; send faxes to group distribution lists; receive confidential faxes whenever they choose; store faxes in a private mailbox for later processing; and end the wait at the fax machine for their transmissions.

Norstar Desktop Messaging

Norstar Desktop Messaging is the solution to information overload. It lets users retrieve all incoming information—voice, fax and e-mail messages—directly from their computer screen. At a glance, a user can see who the messages are from, when they arrived and how urgent they are. They can read or listen to the messages in any order, forward or save them—all at the click of a mouse button. Even when voice, fax and e-mail messages are coming in faster than the user can retrieve them, they can manage and prioritize what's important, saving the rest for later.

Norstar Digital Networking

Norstar Digital Networking is the solution for almost any organization that wants fast, clear and seamless voice and fax communications to everyone across its Local Area Network (LAN) or Wide Area Network (WAN), or via the Internet. Voice messages can be transferred over a LAN/WAN, or the Internet, to other Norstar Voice Mail 3.0 or Meridian Mail (with Network Gateway) systems using standard Internet protocols. Digital Networking also transfers voice and fax messages seamlessly between Norstar systems. And with digital technology, these messages are unaffected by bandwidth or circuit quality, arriving at their destination crystal clear.

Norstar StarTalk FLASH

When it comes to voice messaging, there's a powerful Norstar solution that delivers superior performance... for a lot less money to businesses with smaller caller volumes. StarTalk FLASH is a revolutionary solid-state

solution for intelligent voice processing. It's specially designed to work with Norstar systems to provide Auto Attendant, Cascading Off-Premise Message Notification and Integrated Calling Line ID.

Norstar Call Centers

Norstar Automated Call Distribution (ACD) systems make the idea of "Call Center" capabilities realistic and cost-effective for most any size business. Whether a business needs a powerful ACD system with many agents, or a smaller system for auto answering and call routing, Norstar ACD systems offer high value and are easily cost justified.

Norstar MINUET ACD

Norstar MINUET ACD makes call handling faster and easier with: more efficient call routing, improved customer service, better employee moral, increased revenue, reduced line and toll charges. MINUET ACD supports up to 10 active agents and 15 incoming lines.

Norstar PRELUDE ACD

Norstar PRELUDE ACD is designed for businesses with as many as 15 active phone representatives and up to 30 incoming lines. To help improve how a business handles inbound calls, PRELUDE ACD offers essential features like: real-time group and system status displays, management reports, "longest-idle" call distribution, voice announcements played to callers on hold, call overflow and other advanced call routing.

Norstar CINPHONY ACD

Norstar CINPHONY ACD offers additional capacity and supervisor functions to meet the needs of growing businesses. CINPHONY ACD is available in two capacity levels: Level I supports up to 30 representatives and 80 phone lines; Level II supports up to 80 representatives and 120 phone lines. In addition to all the features of PRELUDE ACD, CINPHONY ACD provides: intelligent call routing, call categorization capabilities, priority queuing for callers, export of ACD information to other software tools for specialized reporting, supervisor tools such as information displays on the Norstar telephone, HELP requests from employees, and silent monitoring.

Norstar Desktop CTI

CTI...TSAPI... TAPI... Enablers... Windows... LANs... A world of complex new words for a simple idea. Norstar introduced Computer Telephony Integration (CTI) with its first system in 1988.

CTI connects the intelligence of the personal computer (PC) with the power and flexibility of the Norstar ICS. Using either Microsoft's Telephony Applications Programming Interface (TAPI), or Novell's Telephone Services Applications Programming Interface (TSAPI), businesses can use a variety of new applications that combine the power of the telephone and computer in exciting new ways.

The Norstar Computer Telephony Adapter family of products bridge the language gap between telephone systems and computers, so businesses can take advantage of the latest CTI applications.

Norstar CTA 100

The CTA 100 connects a PC and a Norstar telephone. Call information is delivered from the Norstar system to the CTA 100, which sends the information to both the telephone and PC. The CTA 100 enables CTI applications like contact managers and screen pops, and even passes Caller ID through to the PC.

Norstar CTA 150i

The Norstar CTA 150i is a card that fits in an expansion slot inside a PC—especially useful if the user is running out of space on their desktop. It provides the same enhanced services of the CTA 100.

Norstar CTA 500dm

The Norstar CTA 500dm provides reliable, high speed end-to-end digital connectivity between a computer and a remote data server, through the Norstar ICS and the public ISDN network. The CTA 500dm supports Point-to-Point protocol and Multi-link, which are widely used in applications such as Internet access and remote LAN access.

Personal Call Manager

All of the Norstar CTA products come with Norstar Personal Call Manager, a Windows 95 TAPI application. Personal Call Manager provides access to the features of a Norstar system from a Windows 95 PC. The user can answer calls, dial, build conference calls, and even see call activity—all on their PC screen. When integrated with Calling Line ID, Personal Call Manager can

"pop" a dialog box to a PC showing who is calling and associated information that may be stored in a database on the PC.

Norstar Mobility

Studies show that people spend approximately 2.5 hours a day away from their desks—and their phones. Think about the revenue impact the resulting inability to communicate could have on a business.

Norstar Mobility with Companion Portable Telephones and Base Stations provides advanced, high quality, wireless telephone communications for businesses. Companion equipment is fully integrated with Norstar, allowing users to access the same system features on their Companion portable telephones as they do on their Norstar telephones at their desks.

And in 1998, Norstar also offers the M7410 Cordless Telephone for workspace mobility.

Norstar Telephones

To end-users, the telephones *are* the lifeline of their business. It's their direct line to customers, suppliers, and other key business contacts. Because their phones are in constant use, reliability is not an option; it's a necessity. Norstar is renown for dependable communications—with one of the highest reliability ratings in the industry, so important phone calls don't get missed.

And since using the telephone system should be easy, all Norstar telephones are equipped with an integrated LCD window that guides you through using your phone *while you're using it*. So users don't spend time in exhaustive training. Plus, all four Norstar telephones provide access to Norstar system features and integration with all Norstar Applications.

A telephone that shows you how to use it



Phones with Standard Features, Not Options

Norstar's integrated LCD Window, standard on every set, prompts users step-by-step through feature usage. Softkeys make it even easier.

- When integrated with Norstar voice messaging, the LCD Window displays "Message for You."
- The built-in speakerphone found on Norstar telephones provides "handsfree" operation (not available on M7100).
- A Headset can be plugged into the Norstar telephones for another method of handsfree operation (not available on M7100).
- Background music and paging can be heard through the speaker on all Norstar telephones.
- Volume Control allows users to set handset, ringer, voice and speaker volume.
- Standard 9-foot cords and wall-mount brackets make it easy to adapt the installation and position of the phone to a user's needs.
- Norstar's Quick Reference Card, mounted conveniently under the handset, reminds users at a glance how to access additional features.

Easy to get Started

Norstar is preprogrammed at the factory for the most commonly used features and functions, so that installation and start-up time is minimal. Users just pop on Norstar's professionally pre-labelled key caps, and their telephone is ready to use!

- Norstar's LCD Window, standard on every telephone, guides users as they use a feature.
- Norstar's user cards "map" simple instructions on where to find buttons and how to use them.
- Norstar prompts in either English, French, or Spanish make employee orientation easy.
- Programmable buttons may be personalized as outside lines, intercoms, speed-dial numbers or favorite features.
- Norstar intercom (internal) lines make sending a message fast and simple.

Easy to Make Calls

Norstar improves business efficiency by making it easy to place calls and use features.

- Place calls faster. Just pick up the handset and Norstar's Automatic Line Selection chooses a free line.
- Eliminate telephone tag. The combination of Norstar's Ring Again and Internal Messaging makes it easy to keep in touch.
- On-Hook Dialing and Last Number Redial make calls quickly and easily, without picking up the handset.
- Notify a coworker of urgent incoming calls or interrupt a conversation with an important message using Priority Call.

Easy to Manage Calls

Standard and optional Norstar features guarantee users never lose a call.

- Move flawlessly through feature operations! Norstar's LCD Window prompts you one step at a time.
- Automatic set relocation lets users move their telephone without losing their programming.
- Work without interruption with features like Do Not Disturb and Call Forward.
- Norstar's LCD Window shows users how to transfer or conference and confirms that the call is complete.
- It's easy to page someone – just touch "Page" and make an announcement through the Norstar phone, auxiliary speakers, or both.
- Place calls faster. Touch a memory button to dial frequently called numbers.

Easy to Add Options

Norstar's flexible design makes it easy to add hardware and software options which tailor the system to your needs.

- Norstar's StarTalk FLASH and Voice Mail are voice messaging, call handling and call routing systems that maximizes call coverage and increase staff efficiency in small site businesses.
- Choose Background Music and Music on Hold for personal enjoyment and that of customers.

- For additional convenience, Night Service Bells, Auxiliary Loud Bells, and External Page Speakers can easily be connected.
- Attach a Key Lamp Module to any M7324 telephone and establish a Central Answering Position. Snap a Busy Lamp Field onto a M7310 telephone to establish an Attendant Position.

Provide Superior Service to Customers or Clients

- Norstar gives you access to the powerful features of the public telephone network through the telephone set.
- With Norstar, users can see who is calling before they pick up the handset. (Dependent on Calling Line ID services from the local service provider).
- Norstar's Call Log captures each caller's number, allowing users to see on their LCD Window who called, how many times they called, if those calls were answered, and by whom.

Third parties continue to develop software programs which enhance Norstar. Applications such as call accounting, personal call managers, and database look-up take advantage of Calling Line ID features. The combination of Norstar, CLID services, and these applications create an office environment which can save time and help offices run more smoothly and efficiently.

Norstar Lifecycle Milestones

The following chart is intended as a guideline only.

Year	Core release	Terminals, peripherals, applications & accessories
1997	Compact ICS Release 2 Modular ICS Release 2	Norstar Applications Module II Norstar Voice Mail Release 3 MINUET ACD Interactive Voice Response Personal Call Manager CTA 100, 150i, 500 dm SMDR 5
1996	Compact ICS Release 1 Modular ICS XC Release 1 USA	Norstar Voice Mail Release 2 (with FAX & AMIS) Nortel Companion - USA ATA - 2 ACD Norstar Remote Utilities
1995	Modular ICS XC Release 1 Canada Modular ICS XL Release 1 USA	Norstar Voice Mail Release 1 (with Dial-by-Name) Nortel Companion - Canada Doorphone StarTalk FLASH Norstar Manager Windows Release 3
1994	Modular ICS Release 1 T1 Modular ICS Release 1 Centrex	SMDR 4 Norstar Manager Windows Release 2
1993	Norstar 3x8 DR5 Compact 6x16 DR5 DS	StarTalk Mini StarTalk AMIS & Release 2.0.2 Norstar Manager Windows Release 1 SMDR 3
1992	Compact 6x16 DR5 Modular 8x24 DR5 Modular 8x24 CTX/DR5	SMDR 2 NorLink Norstar Manager
1991	Modular 8x24 DR4	StarTalk Release 2.0 Enhanced ATA (EATA)
1990	Norstar 3x8 DR1 Modular 8x24 DR3 Modular 8x24 Centrex	StarTalk Release 1.5 M7100 Telephone Station Message Detail Recorder (SMDR) 1 PCI-B Card
1989	Compact 6x16 DR2 Modular 8x24 DR2	
1988	Compact 6x16 DR1 Modular 8x24 DR1	M7208, M7310, M7324 Telephones Key Lamp Module/Central Answering Position Busy Lamp Field Analog Terminal Adapter (ATA) PC Interface Card

Norstar and Power Networks™

More and more companies are building their business around networks. The workforce is becoming much more mobile, with virtual offices, road offices and home offices abounding. Mobility, portable personal computers, wireless access, multi-media, high-speed LANs, the Internet and a host of other developments are driving the rapid proliferation of networks.

Many enterprises are faced with a variety of technology platforms designed for individual services like voice or data, configured for either the local area or the wide area. These patchwork solutions are usually inflexible, expensive to operate and difficult to manage.

The Norstar Integrated Communications Systems (ICS) portfolio, introduced in 1994, is based on a vision that links computers and communications platforms, networks and components to deliver innovative solutions to today's business challenges and tomorrow's opportunities. With Norstar, a small system can offer companies the kind of power previously found only in big-business environments. Thanks to its building-block design, Norstar systems easily expand for even more power as the company grows. It's an approach that makes the most of voice, data, and video technologies - both now and in the future.

As technology drives toward integrating communications of every type at the desktop, Norstar transforms networks into Power Networks by making them responsive, reliable, simple, secure and flexible - at a lower total cost of ownership than traditional networks.

Power Networks feature all, or part, of the following elements:

- Digital switching
- Internet/Intranet solutions
- Multimedia applications
- Mobility
- Wide area networks (WAN)

By integrating advanced computing and communications technologies, Norstar brings Power Networks within the reach of companies with small-scale telephony requirements.

Norstar and ISDN

The Norstar ICS platform provides Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) functionality to the small site business.

ISDN technology provides a fast, accurate and reliable means of sending and receiving data, images, text and voice information through a single pair of copper wires.

With end-to-end digital connectivity on all transmission circuits, ISDN offers significantly higher bandwidth and speed than analog transmission. Because they are digital, ISDN lines provide better quality signaling than analog POTS lines; and ISDN's out-of band Data channel signaling offers faster call set up and tear down.

While an analog line only carries a single transmission at a time, an ISDN line can carry one or more voice, data, fax and video transmissions. For example, a user can connect to a remote computer and transfer a large data file while simultaneously making a voice call.

To transfer a 1MB data file, an analog modem operating at 14.4K takes about 4.5 minutes. A 28.8K modem cuts that transfer time in half. But by using just one channel of an ISDN line, transfer time is reduced to only 1 minute - and if both ISDN channels are used, transfer time for a 1MB file is slashed to just 30 seconds!

When transmitting data, connect time for an average ISDN call is about 3 seconds per call, compared with about 21 seconds for the average analog modem call.

ISDN supports access to existing public voice services, including Plain Old Telephone Service, Plain Old Long Distance Service, virtual voice networks, 800 lines and 900 lines. ISDN also supports access to existing public data services, including Switched 56 and X.25. And because ISDN lines use the same twisted-pair copper wires as analog lines, customers do not need to re-wire their premises to use ISDN.

ISDN lines

ISDN lines are made up of separate channels which transmit information simultaneously:

- B (Bearer) channels with individual speeds of 64kbps, which can be used to carry a voice conversation, high-speed data flow or image

- D (Data) channel for carrying control and signaling information and packet switched data

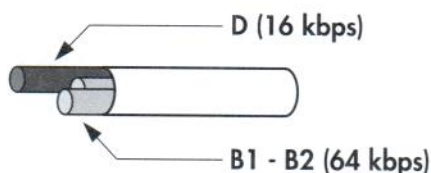
Because each ISDN line has more than one B-channel, a user can perform more than one transmission at the same time using a single ISDN line. Alternatively, B-channels may be bonded into a single high-speed data line, to provide more bandwidth on demand for rapid transmission or receipt of data files.

Two types of ISDN service are available: Basic Rate Interface (BRI) and Primary Rate Interface (PRI). The current Norstar ICS platform delivers BRI functionality. PRI functionality is targeted for availability in 1998.

Basic Rate Interface (BRI)

ISDN BRI is known as "2B+D", because it consists of three separate channels: two B-channels which can be used to carry a voice conversation, high-speed data flow or image; and one D-channel for carrying control and signaling information and packet-switched data, such as credit card verification.

ISDN Basic Rate Interface line - 2B + D

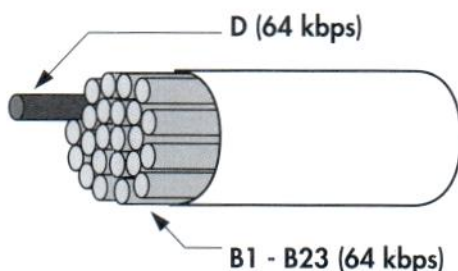


The two B-channels can replace two analog lines in many applications. As a result, many customers will be able to use a single BRI circuit, with a single access number, for all of their voice, fax and data transfer applications.

Primary Rate Interface (PRI)

ISDN PRI is known as “23B+D”, because it consists of 24 separate channels: 23 B-channels each of which can be used to carry a voice conversation, high-speed data flow or image; and a D-channel for carrying control and signaling information. The D-channel of a PRI line cannot carry packet data (such as credit card verification).

ISDN Primary Rate Interface line - 23B + D



PRI uses the same hardware platform as T1, and will be implemented with a software-only upgrade once it becomes available for wider deployment on the Norstar Modular ICS.

ISDN applications

ISDN offers a wide range of powerful business applications:

- **Videoconferencing and video telephony**
Videoconferencing offers instant visual and audio contact between distant parties using either studio-based or desktop ISDN terminals.
- **Desktop conferencing**
ISDN allows computer users in distant locations to share and edit any image, data or text file on their own computer screens while they discuss the information.
- **File transfer**
The ISDN network allows you to transfer files containing data, text, images, data or audio clips, faster and cheaper than with a conventional modem.
- **Telecommuting**
Convenient retrieval, processing and storage of files is possible for the employee working at home by using ISDN lines to give high-speed access to information resources at the office.
- **Group 4 fax**
ISDN fax applications save money by increasing both transmission speed and the quality of resolution.
- **Remote LAN access**
ISDN provides an affordable and fast means for employees at remote sites (at home or branch offices) to access local area networks (LANs).
- **Leased line backup**
Essential backup for leased lines can be provided using ISDN as required instead of duplicating costly permanent leased lines.
- **LAN to LAN bridging**
Local area network (LAN) bridge/routers allow flexible interconnection between LANs using ISDN. The user is charged only when information is actually transmitted.
- **Broadcasting**
By using ISDN and digital codecs (an analog to digital interface), broadcasters can transmit music, news, or commentaries with superior clarity.
- **Video surveillance**
Dial-up access using videocodecs (an analog to digital interface) provides advanced surveillance on demand.

- **Internet and database access**

The fast call set up and high bandwidth of ISDN are ideal for accessing information services such as the Internet and databases.

National ISDN Standards

National ISDN is a set of standards developed by manufacturers and operating companies which enables ISDN services and equipment to be deployed in a multi-vendor environment.

Equipment that is in agreement with 100% of the National ISDN Standard specifications is termed "compliant", and equipment that works in accordance with National ISDN Standards is termed "compatible". Norstar is **compatible** with the National ISDN Standards.

Ordering ISDN

Prior to the development of standardized Bellcore packages, ISDN services were ordered individually – a complicated and time-consuming process. Bellcore Capability Packages represent different configurations of ISDN services. In most instances, Norstar installations will use either Bellcore Capability Package "M" (voice and data) or "P" (voice, data and packet switching). In Canada, the Stentor brandname for ISDN-BRI is "Microlink".

Although Bellcore Capability Packages have greatly simplified the process of ordering ISDN services, different telcos may offer different combinations of ISDN service in addition to or instead of the Bellcore packages.

Preparing for ISDN in your territory

Before promoting ISDN solutions to their customers, sales people must thoroughly research the following issues:

- Is ISDN service available?
- Is the available ISDN service compatible with the National Standards?
- Is ISDN a cost-effective solution?
- What ISDN user groups or forums exist?
- What is the telco's timeframe for ordering Bellcore packages supported by Norstar Compact and Modular ICS Release 2.0?

10 Reasons to Buy Norstar

Our original research for Norstar told us that businesses wanted a telephone system that was flexible, reliable and above all, easy to use. Norstar's modular design, digital technology and LCD Window answer these needs simply and completely.

Because communications is such an intricate part of doing business, the telephone system a business chooses can make a crucial difference in their success.

At Norstar we've kept things simple, but included a variety of sophisticated features and capabilities. Users get an easy-to-use communications system that gives them advanced technology today. Whether they're a small company with growing needs or a big company with far reaching objectives, Norstar has a system that works for them.



- 1 Norstar has one of the lowest failure rates in the industry, which means it is an extremely durable and reliable communications system.
- 2 Norstar's LCD Window walks users through feature and application usage. This makes Norstar one of the easiest telephone systems to use and eliminates the time and need for time consuming and expensive training sessions.
- 3 Norstar's advanced architecture provides high bandwidth to the desktop. This means users can take advantage of applications like ISDN and Computer Telephony Integration without any changes to existing wiring. Norstar can meet business needs today as well as in the future.
- 4 Norstar's scalable design allows telephone systems to grow with the business. Expansion Cartridges or Station and Trunk Modules enable users to easily increase system size, whether the business has one employee or one hundred. And the investment is protected, since common hardware components, most peripherals and all telephone sets can be used on larger Norstar systems.

Norstar's scalable design also makes it easier to add software and hardware options to the system, tailoring it to communication needs.:

5

Norstar applications, like StarTalk FLASH, Voice Mail, Desktop Messaging, Digital Networking and FAX Messaging handle the complex messaging needs of businesses with a large number of callers; Norstar Automatic Call Distribution (ACD) systems route calls more efficiently; Norstar Computer Telephony Integration links your computer and telephone; and key lamp modules and busy lamp fields maximize call coverage and increase office productivity.

6

Norstar's digital architecture creates a platform for current and future PC-based applications. Special software packages can distribute calls, track billable activity and generate reports on incoming and outgoing telephone calls.

7

Norstar features a family of award-winning telephone sets. Norstar's attractive high-tech and compact design makes it a favorite with professional office designers.

8

Norstar telephone sets (M7100, M7208, M7310, and M7324) feature built-in handsfree speakerphones (except M7100); built-in wall mount capability; headset jacks (except M7100); and volume controls. These features are standards, not options.

9

Norstar is the #1 small system for business communications in the world. Norstar telephones sit on the desktops of over 8 million business people in more than 80 countries around the globe. (Source: Northern Business Information/Datapro 1996).

10

Norstar is manufactured and supported by Nortel, a 100-year-old company that is one of the world's leading providers of digital telecommunications and transmission equipment.

100 Years Of Quality And Reliability

Norstar is an industry leader in quality and reliability. Norstar is manufactured and backed by Nortel (Northern Telecom), a \$12.8 billion telecommunications giant. Founded in 1895, Nortel designs, builds, and integrates digital networks for customers in the information, entertainment, education and commerce markets.

Nortel introduced digital technology to the telecommunications industry in 1976. Today, Nortel has shipped and installed more digital lines worldwide than any other company.

Nortel's major products include digital switching systems; private branch exchanges and key systems; multimedia communications solutions; digital high-capacity, cellular mobile telecommunications switches and radios; wireless access systems; a complete portfolio of personal communications services products; and a broad range of optical fiber transmission and cable products, including synchronous digital hierarchy transmission equipment. Its customers are large corporations, local and national governments, public telephone companies, universities, hospitals, cable television companies, consumers and small-site businesses.

The company's products are sold in North America through Nortel Authorized distributors. Nortel is the largest telecommunications supplier in Canada and second largest in the US. The company is also a leading supplier of digital communications systems to the US military.

Nortel's research capabilities around the world include a network of research and development facilities, affiliated joint ventures, and other collaborations fostering innovative product development and advanced design in 14 countries.

Nortel's common shares are listed on the New York, Toronto, Montreal, Vancouver, and London stock exchanges.

Nortel and the Environment

Nortel is committed to being a leader in the telecommunications industry in protecting and enhancing the environment. To live up to this goal, the company must continually develop innovative approaches to managing the environmental impact of its products from conception to final disposition.

Environmental excellence is excellent business. Nortel's experience demonstrates that sound environmental management can bring financial benefits. By aiming for both economic and ecological efficiency, the company has reduced costs and begun to fulfill its social responsibility toward future generations.

Nortel's corporate Environmental Management Systems Standard uses quality management approaches as a model. It orients the company's comprehensive environmental protection program to a continuous improvement focus, and helps managers in Nortel operations around the world systematically scrutinize all activities looking for inefficiency and unnecessary waste. At the heart of the program are the company's 57,000 employees, who are encouraged to innovate and influence business operations to help meet the corporation's environmental goals and targets. Each year, the company voluntarily submits its environmental record to public scrutiny.

Nortel was the first in the telecommunications industry to eliminate the use of ozone-depleting chlorofluorocarbon (CFC-113) solvents from worldwide manufacturing and research operations. Such environmental achievements have won Nortel prestigious awards from organizations such as the United Nations Environment Programme (UNEP) and the U.S. Environmental Protection Agency.

One key to Nortel's success is its willingness to share technologies and expertise in protecting the environment. In several countries, Northern Telecom has volunteered to work with governments, customers and even its competitors for the benefit of the global environment.

Nortel will continue to pursue its mission of leadership and stewardship, setting new goals and meeting new challenges through innovation, determination and dedication.

Hardware

In addition to all of the features and benefits of previous Norstar products, Release 2.0 of Compact ICS and Modular ICS bring many new application features and enhancements, including high speed digital connectivity across the public telephone network using ISDN Basic Rate Interface.

Norstar Integrated Communications System (ICS)

Typically, the small site business market is made up of users who need communications systems with between 3 and 150 telephones. Over the past 5 years, this market has grown at an average rate of 9.5 percent annually with continued strong future growth expected as customers replace their older systems to gain the advantages of current applications. Norstar is the worldwide market leader in small site communications systems with the two core units in the Norstar ICS product portfolio, the Compact ICS and the Modular ICS, forming the foundation of the product line in this global success.

The Compact ICS targets small businesses requiring 4 to 20 telephones and the resources to take advantage of new technological advances in the telecommunications industry.

The Compact ICS starts as a 4x16 system and can grow to a 16x24 system without replacing the core unit. A 4x8 configuration is also available for situations where a lower price is essential.

Since existing Norstar telephones and most peripheral equipment currently operating on Norstar core systems works on the Norstar Compact ICS, it is an attractive alternative for users who currently have 3x8 or Compact 6x16 systems. Compact ICS also provides a smooth transition to the Modular ICS

by allowing trunk cartridges, terminals, wiring and applications to be reused on the larger system.

The Modular ICS targets businesses that require between 20 and 150 telephones and require capabilities which allow for more power, more growth and more advanced applications.

The Modular ICS core unit is equipped with 32 station ports and includes two slots for the addition of T1, ISDN-BRI or analog trunk cartridges. Customers may grow this capacity as required by adding fiber station modules, fiber trunk modules and analog station modules, to a maximum capacity of 272 ports.

Like the Compact ICS, the Modular ICS provides existing Norstar Modular 8x24 customers with the opportunity to upgrade to new values such as T1, ISDN, Nortel Companion mobility and larger system capacities while maintaining much of their existing common equipment.

The Norstar 3x8 system will continue to be offered for small businesses that need the key system features offered by the Norstar 3x8, but not the advanced digital capabilities of the ICS portfolio.

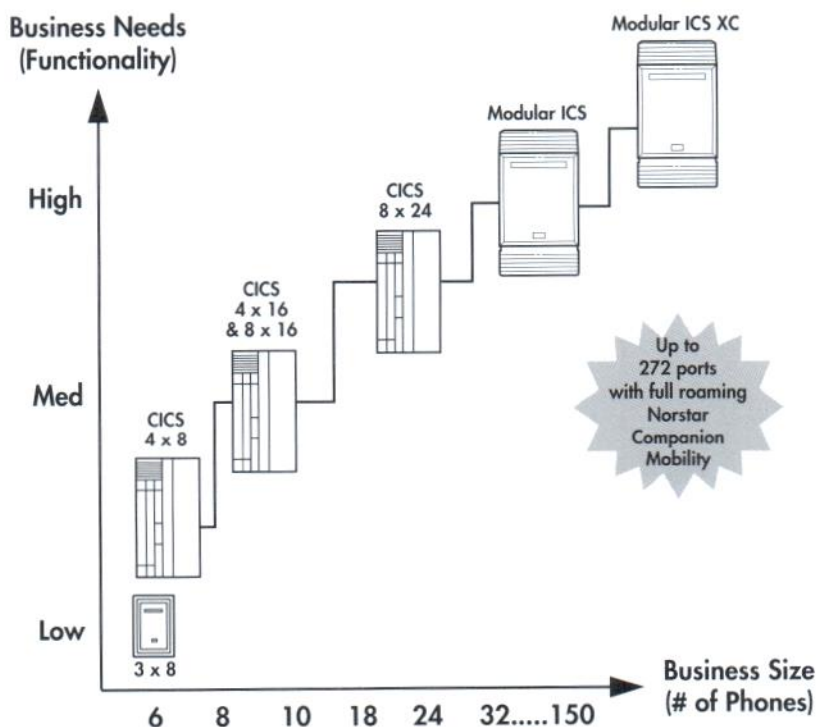
The following statements highlight some of the benefits and key selling features of the Norstar ICS:

- Ease of use
 - Norstar's interactive LCD Window walks users through features, applications and network services, making Norstar one of the easiest to use telephone systems in the marketplace.
- Flexibility and growth
 - The Compact ICS allows users to start with an initial 4 CO trunks and then grow to 16 CO trunks, if and when required. Station growth is also flexible. The system can be purchased as an 16 station configuration and grow to 24 stations when required.
 - Modular ICS starts as small as 4x32, and with XC software installed, it can grow to support 272 ports, 192 telephones, and 60 portable handsets for full roaming Companion wireless capability.
- Integration
 - Norstar ICS makes it easy to add integrated applications when customers need them, like Voice Mail, Desktop Messaging, Call Centers, or Computer Telephony Integration (CTI) products.

- Investment protection
 - The common components in the ICS platform protects the initial investment if the business grows in size to the requirements of the Modular ICS. If a Compact ICS is upgraded to a Modular ICS approximately 80% of the original investment is retained.
- Reliability
 - Norstar is the industry leader in system reliability with the highest Mean Time Between Failure (MTBF). Reliability is one of a customer's highest priorities when selecting a system.

Note: The hardware mentioned in this section may not be a standard offering with your company. Before talking to a customer about information in this chapter, please check for availability, pricing, current distribution and support policies.

Norstar Portfolio



Norstar Core Units

Each Norstar core unit includes a power supply, an interface to connect outside lines and stations, and programmable memory. In addition, the Compact ICS and Modular ICS have separate, upgradable feature cartridges.

The Norstar core units are energy efficient, requiring low power consumption, and use standard grounded wall sockets. Analog devices are supported by either an Analog Terminal Adapter or the Analog Station Module (Modular ICS only). The polarity insensitive single-pair of twisted wire used for wiring stations makes installation simple.

Note: As of 20 February 1997, the following are retired from the Norstar product line: the Norstar Compact 6x16, the Norstar Modular 8x24, the Norstar 3x8 DR1 and the Norstar 3x8 Basic (US only). At this time, Modular 8x24 Expansion Cartridges, Copper Station Modules, and Copper Trunk Modules are still part of the Norstar portfolio.

Previous users of the Norstar 0x32 system should note that the Key Service Unit (KSU) has been renamed the Integrated Communication System (ICS).

Today's business world is evolving. A business that would have been classified as a "small" business in the past might now have the same requirements for sophisticated features and performance as a business many times its size. These businesses are better thought of as "small site" businesses with big business demands for the latest advances in:

- mobility
- messaging (voice, fax, e-mail)
- call centers
- networking (LAN/WAN)
- simultaneous transmission of voice, data and video
- computer/telephone integration and software applications
- digital imaging
- faster processing
- video conferencing

The Norstar product family meets this growing market challenge with solutions that meet the needs of even the most sophisticated small systems customer.

Compact ICS Release 2.0 Overview

Compact ICS Release 2.0 replaces Release 1.0 described below and includes the following enhancements and new features:

- Configurations from 4x16 to 16x24 (with ISDN-BRI) offer precise customization, seamless growth and investment protection. (A 4x8 configuration is also available for situations where a lower price is essential.)
- Architecture which allows for ISDN and higher bandwidth switching, using ISDN-BRI cartridges and clocking support.
- Two universal cartridge slots which accept any combination of Analog Trunk Cartridges and ISDN-BRI Interface Cartridges, giving customers the ability to mix and match analog and ISDN lines on the same system.
- Software upgrades and remote administration programming can be enabled using the Internal Remote Access Device (I-RAD), offering a significant convenience to customers. Remote administration capability translates into cost savings as site visits are no longer necessary for moves, changes and some upgrades.
- Supports up to ten Computer Telephony Adapters 500dm (CTA 500dm).
- Call park code is enhanced with the option to choose linear or round robin code selection.
- Security is enhanced by providing controlled access to the Link feature and Last Number and Saved Number Redial.
- "Find" softkeys in programming reduce the number of keystrokes needed to complete installation and administration.

The following features introduced with Compact ICS Release 1.0 are carried forward in Release 2.0:

- The core unit includes an internal Analog Terminal Adapter (I-ATA), so one analog device (such as a fax machine) can be plugged directly into the Compact ICS without taking up a station port.
- A built-in Auto Attendant automatically answers incoming calls. Callers can either enter an extension number or use Custom Call Routing to reach a specific extension or department.
- The new programming structure includes the following features:
 - Four-level access to programming, depending on password level: Installer, System Coordinator, System Coordinator Plus and Basic.

- User Preferences feature gives easy access to personalized programming for individual phones, allowing all telephone sets to be programmed from a single telephone.
- Any version of the Restricted Software Feature Cartridge (1.0 or 2.0) can be expanded with no additional hardware by ordering Software Key Codes and entering them into the system.
- Optional built-in Remote Access Device makes it possible to change programming and monitor the system from a remote location.

Compact ICS Customer Profile

Norstar Compact ICS responds to the following trends in the small business market:

- The market is primarily driven by the needs of the traditional small site business. In 1996, 83% of all systems sold in North America supported 2 to 20 telephones.
- The small business market is rapidly changing from basic telephony requirements to enhanced, integrated needs. The market is looking for solution providers; applications which can provide a competitive differentiation are driving change.
- Businesses now expect their communication system to handle their current needs, have the flexibility and capability to meet their growing needs in the future, and protect their investment.
- The ISDN network is being deployed rapidly, and the speed at which it can transmit information will allow new applications to be developed for a competitive advantage. Compact ICS delivers full ISDN-BRI functionality.

The competitively priced Norstar Compact ICS meets the existing telephony requirements of small businesses, and can take them the additional step into new technology. The product is an exciting and simple solution which accommodates future growth, both in the number of lines and the available technology. It has a high feature-to-price ratio which shows value both today and in the future.

Compact ICS Configuration

- Two universal slots in the Compact ICS can be populated with any combination of the following trunk cartridges:

- 2-port U Interface ISDN-BRI
- 4-port U Interface ISDN-BRI
- 4-port S/T Interface ISDN-BRI
- Loop Start analog
- Caller ID analog

For cartridge descriptions, see Compact ICS Interface Cartridges in this chapter.

- The software Feature Cartridge is an industry standard PCMCIA (Personal Computer Memory Card International Association) cartridge. Approximately the size of a credit card, it stores the system programming and is used to run the system. Four versions of the Compact ICS software cartridge are available:
 - Standard Software supports the use of both universal cartridge slots for a maximum of 8 CO trunks, or 16 ISDN-BRI digital lines, and up to 24 station ports.
 - Standard Software with Internal Remote Access (IRAD) Enabled offers the same as the Standard Software outlined above, but with IRAD enabled.
 - Restricted Software supports the use of one universal cartridge slot for a maximum of 4 CO trunks and 8 of the 16 potential station ports. To expand the system beyond 4x8, a Restricted to Standard Software Key Code upgrade must be purchased.
 - Restricted Software with Internal Remote Access (IRAD) Enabled offers the same as the Restricted Software outlined above, but with IRAD enabled.
- The following table outlines the possible configurations for Compact ICS:

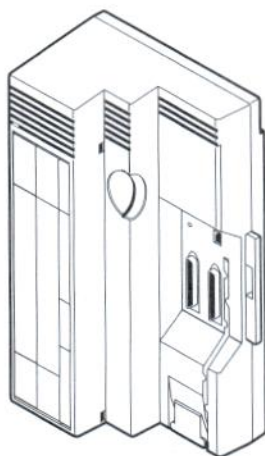
Software	Universal slot 1	Universal slot 2	Expansion slot	Maximum size
Restricted	Analog			4x8
Restricted	2-port U ISDN			4x8
Standard	Analog			4x16

Software	Universal slot 1	Universal slot 2	Expansion slot	Maximum size
Standard	2-port U ISDN			4x16
Standard	4-port U ISDN			8x16
Standard	Analog	Analog		8x16
Standard	Analog	2-port U ISDN	Services	8x16
Standard	Analog	2-port U ISDN	Combination	8x24
Standard	Analog	4-port U ISDN	Services	12x16
Standard	Analog	4-port U ISDN	Combination	12x24
Standard	2-port U ISDN	2-port U ISDN	Services	8x16
Standard	2-port U ISDN	2-port U ISDN	Combination	8x24
Standard	2-port U ISDN	4-port U ISDN	Services	12x16
Standard	2-port U ISDN	4-port U ISDN	Combination	12x24
Standard	2-port U ISDN	4-port S/T ISDN	Services	4x20 (16 TCM + 4 S/T ISDN)
Standard	2-port U ISDN	4-port S/T ISDN	Combination	4x28 (24 TCM + 4 S/T ISDN)
Standard	4-port U ISDN	4-port U ISDN	Services	16x16
Standard	4-port U ISDN	4-port U ISDN	Combination	16x24
Standard	4-port U ISDN	4-port S/T ISDN	Services	8x20 (16 TCM + 4 S/T ISDN)
Standard	4-port U ISDN	4-port S/T ISDN	Combination	8x28 (24 TCM + 4 S/T ISDN)

Note: Analog trunk cartridges can be either Loop Start or Caller ID.

This table assumes the use of all U Interfaces as network side connections, and the use of all S/T Interfaces as station side connections. The U Interfaces may be configured for station side connection and S/T Interfaces may be used for network side connections. (Use of an S/T Interface on the network side requires a customer supplied NT1 Interface device.)

Compact ICS Core Hardware



Description

Length:	435 mm (17.3 in.)
Width:	238 mm (9.4 in.)
Depth:	168 mm (6.63 in.)
Weight:	3.05 kg (6.7 lb.)
Color:	Dolphin Grey

- The Core Unit is easily mounted using 3 screws.
- A Services Cartridge plugs into the Core Unit expansion slot to provide synchronization to network timing for ISDN-BRI trunk cartridges.

A Combination Services Cartridge is available to provide both timing for ISDN-BRI trunk cartridges, and expansion from 16 to 24 station ports. (No Trunk Modules or Station Modules are required for expansion.)

- Two 50-pin amphenol connections are used as the interface for CO trunks, stations, and for the internal ATA and RAD connections. The amphenols are also used for connection of external devices such as music on hold source, paging and auxiliary ringers.
- The internal Analog Terminal Adapter (I-ATA) provides a connection for a modem, fax machine or analog telephone, and does not take up a station port.
- Emergency Line Transfer Connection provides a line to connect a 2500 set in the event of a power failure, for the customer who does not have a battery back up system. Only available if the Compact ICS is configured with at least one analog line.

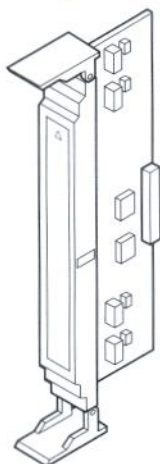
- An optional software key code can be purchased to enable the internal Remote Access Device (I-RAD).

Once the I-RAD is enabled, Remote Tools, a component of the latest release of Norstar Remote Utilities remote administration software, allows remote programming for adds, moves, changes and troubleshooting. This can be done from a single remote site by the distributor instead of a site visit.

- Remote Administration translates into more efficient and faster response time when adds, moves or changes are required. Operational costs are reduced and the quick response time boosts customer satisfaction.
- Remote Tools is a component of Norstar Remote Utilities (NRU), the latest release of Norstar remote administration software. Remote Tools provides Windows-based capabilities for configuring, programming, backing up and maintaining the Norstar Compact ICS and peripherals. See the Norstar Remote Administration Chapter for more information.

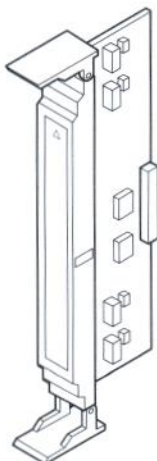
Compact ICS Interface Cartridges

LS/DS Analog Trunk Cartridge



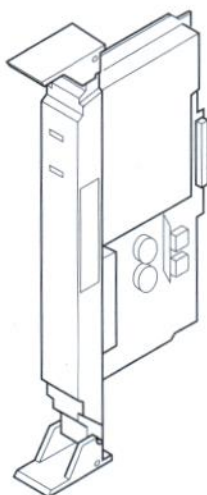
- Provides access for up to four Central Office analog lines.
- All LS (Loop Start)/DS (Disconnect Supervision) Trunk Cartridges have Disconnect Supervision capability and are labeled "DS" on the faceplate.
- Also called the New DS Loop Start Trunk Cartridge.
- Compatible with the Modular ICS core, Fiber and Copper Trunk Modules, the Compact ICS core and the Modular 8x24 Copper Trunk Module.

Caller ID Analog Trunk Cartridge



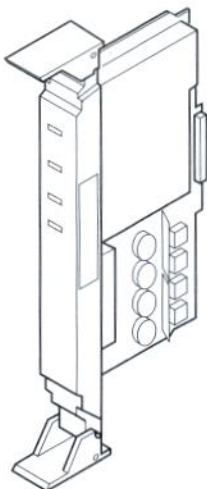
- The Caller Identification (CI) Trunk Cartridge has the same functionality as the LS/DS Trunk Cartridge but with the additional capability to detect and translate incoming CMS/CLASS information for display on Norstar sets.
- The CI Trunk Cartridge is required when any CMS/CLASS lines terminate on the Compact ICS.
- Provides access for up to four Central Office analog lines.
- Compatible with the Modular ICS core, Fiber and Copper Trunk Modules, the Compact ICS core and the Modular 8x24 Copper Trunk Module.

2-Port U Interface ISDN-BRI Cartridge



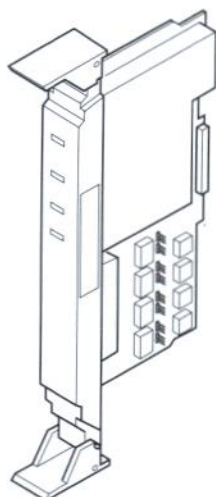
- Supports two ISDN-BRI U Interfaces per cartridge.
- Integrated Network Termination Type 1 functionality.
- Interfaces can be individually configured to be a network interface or a station side equipment interface.
- Can be configured to support a D-channel packet interface
- Powered by the cartridge slot connector.
- LED on cartridge faceplate gives visual indication of circuit status (activated or deactivated).
- Compatible with Compact ICS and Modular ICS.
- Requires Services Cartridge.

4-Port U Interface ISDN-BRI Cartridge



- Supports four ISDN-BRI U Interfaces per cartridge.
- Integrated Network Termination Type 1 functionality.
- Interfaces can be individually configured to be a network interface or station side equipment interface.
- Can be configured to support a D-channel packet interface.
- Powered by the cartridge slot connector.
- LED on cartridge faceplate gives visual indication of circuit status (activated or deactivated).
- Compatible with Compact ICS and Modular ICS.
- Requires Services Cartridge.

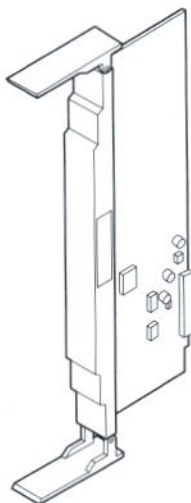
4-Port S/T Interface ISDN-BRI Cartridge



- Supports four ISDN-BRI S/T Interfaces per cartridge.
- Interfaces can be individually configured to be a network interface or a station side equipment interface.
- Can be configured to support a D-channel packet interface.
- Powered by the cartridge slot connector.
- LED on cartridge faceplate gives visual indication of circuit status (activated or deactivated).
- Compatible with Compact ICS and Modular ICS.

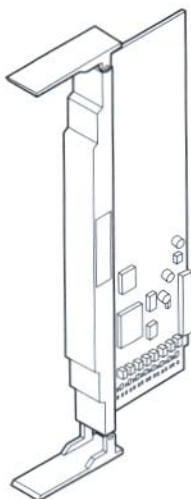
Compact ICS Clock Services/Expansion Cartridges

Services Cartridge



- Provides clocking for ISDN-BRI circuits.
- Only required if using ISDN-BRI cartridge; and 16 or fewer stations.
- Installs in the Expansion Card slot in the core unit.
- Compatible with Compact ICS only.

Combination Services Cartridge



- Provides clocking for ISDN-BRI circuits and expansion from 16 to 24 station ports.
- Required for TCM port expansion.
- The Combination Services Cartridge replaces the 8-Port TCM Expansion Cartridge that is no longer available.
- Compatible with Compact ICS only.

Compact ICS Expansion

Restricted to Standard Software Key Code Upgrade

2 The Compact ICS 4x8 Restricted Software can be upgraded by purchasing the Restricted to Standard Software Key Code. This software key code immediately enables the additional 8 stations within the core unit, making 16 stations available without additional hardware.

The software key code also enables the second universal trunk slot to support an additional trunk cartridge. Adding a Combination Services Cartridge allows further station expansion from 16 to 24.

The 4x8 software cartridge itself does not have to be replaced at any time during this expansion process.

On a Compact ICS 4x16 system with Standard Software, adding a Combination Services Cartridge expands the number of station ports from 16 to 24.

More lines are added by purchasing either an analog trunk cartridge (for 4 CO lines) or an ISDN-BRI cartridge (for up to 8 ISDN digital circuits). The cartridge is inserted in the second universal trunk slot on the core unit.

Internal Remote Access Device Key Code Upgrade

The Internal Remote Access Device Software Key Code allows a customer who has purchased a Compact ICS with Standard Software or Restricted Software to enable the internal Remote Access Device.

Compact ICS Core Unit Bundles

The tables below show the four Compact ICS core unit bundles that can be ordered, and how to expand them:

Action	Item purchased	Part number
To start with a 4x8 system and four LS/DS analog lines	Purchase a Compact ICS equipped with a LS/DS Analog Trunk Cartridge	Bundle A0652667
	and Compact ICS Restricted Software (comes with English documentation)	A0655694
	or Compact ICS Standard Software (comes with English documentation)	A0654690
To add 4 analog lines	Purchase Restricted to Standard Software Key Code for upgrade (only if Restricted Software on system)	A0659207
	and Purchase a LS/DS Analog Trunk Cartridge	A0405799
	or a Caller ID Analog Trunk Cartridge	A0393277
To add 4 ISDN circuits	Purchase a 2-port U Interface ISDN-BRI Cartridge	A0652049
	and a Services Cartridge	A0652074
To add 8 ISDN circuits	Purchase a 4-port U Interface ISDN-BRI Cartridge	A0652051
	or Purchase a 4-port S/T Interface ISDN-BRI Cartridge	A0633567
	and a Services Cartridge	A0652074
To add 8 station ports	Purchase Restricted to Standard Software Key Code for upgrade (only if Restricted Software on system)	A0659207
To add 16 station ports	Purchase a Combination Services Cartridge	A0652072

Action	Item purchased	Part number
To start with a 4x8 system and four Caller ID analog lines	Purchase a Compact ICS equipped with a Caller ID Analog Trunk Cartridge	Bundle A0652668
	and Compact ICS Restricted Software (comes with English documentation)	A0655694
	or Compact ICS Standard Software (comes with English documentation)	A0654690
To add 4 analog lines	Purchase Restricted to Standard Software Key Code for upgrade (only if Restricted Software on system)	A0659207
	and Purchase a LS/DS Analog Trunk Cartridge	A0405799
	or a Caller ID Analog Trunk Cartridge	A0393277
To add 4 ISDN circuits	Purchase a 2-port U Interface ISDN-BRI Cartridge	A0652049
	and a Services Cartridge	A0652074
To add 8 ISDN circuits	Purchase a 4-port U Interface ISDN-BRI Cartridge	A0652051
	or Purchase a 4-port S/T Interface ISDN-BRI Cartridge	A0633567
	and a Services Cartridge	A0652074
To add 8 station ports	Purchase Restricted to Standard Software Key Code for upgrade (only if Restricted Software on system)	A0659207
To add 16 station ports	Purchase a Combination Services Cartridge	A0652072

Action	Item purchased	Part number
To start with a 4x16 system and 4 ISDN-BRI "U" circuits	Purchase a Compact ICS equipped with a 2-port U Interface ISDN-BRI Cartridge	Bundle A0655689
	and a Services Cartridge	A0652074
	and Compact ICS Standard Software	A0654690
To add 4 analog lines	Purchase a LS/DS Analog Trunk Cartridge or a Caller ID Trunk Cartridge	A0405799 A0393277
To add 4 ISDN circuits	Purchase a 2-port U Interface ISDN-BRI Cartridge	A0652049
To add 8 ISDN circuits	Purchase a 4-port U Interface ISDN-BRI Cartridge	A0652051
	or Purchase a 4-port S/T Interface ISDN-BRI Cartridge	A0633567
To add 8 station ports	Purchase a Combination Services Cartridge	A0652072

Action	Item purchased	Part number
To start with a 4x16 system and 8 ISDN-BRI "U" circuits	Purchase a Compact ICS equipped with a 4-port U Interface ISDN-BRI Cartridge	Bundle A0655691
	and a Services Cartridge	A0652074
	and Compact ICS Standard Software	A0654690
To add 4 analog lines	Purchase a LS/DS Analog Trunk Cartridge or a Caller ID Trunk Cartridge	A0405799 A0393277
To add 4 ISDN circuits	Purchase a 2-port U Interface ISDN-BRI Cartridge	A0652049
To add 8 ISDN circuits	Purchase a 4-port U Interface ISDN-BRI Cartridge	A0652051
	or Purchase a 4-port S/T Interface ISDN-BRI Cartridge	A0633567
To add 8 station ports	Purchase a Combination Services Cartridge	A0652072

Modular ICS Release 2.0 Overview

Modular ICS Release 2.0 includes the following enhancements and new features over Modular ICS 1.0 and 1.1 (Please see Chapter 4 for software feature descriptions):

- Configurations to 144 lines (with ISDN-BRI), 192 stations, and 60 Companion portable handsets.
- Architecture which allows for ISDN and higher bandwidth switching, using ISDN-BRI cartridges and clocking support.
- Cartridge slots can accept a combination of Analog or T1Trunk Cartridges and ISDN-BRI cartridges, giving customers the ability to mix and match analog and digital lines on the same system.
- Supports up to ten Computer Telephony Adapters (CTA 500dm).
- Call park code is enhanced with the option to choose linear or round robin code selection and the ability to re-park a call into the same zone.
- Security is enhanced by providing controlled access to the Link feature and Last Number and Saved Number Redial.
- "Find" softkeys in programming reduce the number of keystrokes needed to complete installation and administration.
- Programming for operations, administration and maintenance has been redesigned to make both installation and adds, moves and changes on the system easier.
- Physical problems with a Norstar telephone can now be verified by entering a Station Set Test feature code ().

The following features from Release 1.0 and 1.1 are carried forward in Release 2.0:

- Support for T1, LDS, CLID, DID and E&M trunk cartridges
- Fully integrated Nortel Companion Wireless.
- Growth to 272 ports.
- Support for Analog Station Modules.

Modular ICS Customer Profile

A Norstar Modular ICS customer is looking for increased processing power, networking capability and advanced features that can be customized to fit both present and future communications needs.

The Modular ICS customer wants the ability to integrate high value applications to their system as the business need arises: advanced Voice Mail, Call Center Applications, integrated Mobility, Internet Access, ISDN and Desktop CTI.

The Modular ICS customer also wants to take full advantage of network services such as Calling Line ID, to improve customer satisfaction and business efficiencies.

And the Modular ICS customer wants the assurance that their investment will be protected because their system can grow both in size and functionality.

Norstar Modular ICS brings all of these values, while preserving the simplicity of use that has become the Norstar trademark in the industry.

Modular ICS T1 - Customer Profile

A Modular ICS Customer will choose T1 for several reasons. Businesses which require greater bandwidth will first need to look at the economics of T1. Because the cost of installing T1 is dropping rapidly, more and more businesses are finding T1 is a viable option.

Fractional T1 allows a company to use part of a T1 circuit (for example, 10 rather than 24 lines). This option makes it economical for the traditional Norstar system and hybrid telephone user to purchase T1.

Beyond economics, T1 provides quality of service with enhanced features. T1 is attractive to companies looking for the ability to change bandwidth as required and to managing their own network.

Current T1 customers will also have the opportunity to move to ISDN PRI in 1998 using their current T1 hardware. Only a software upgrade will be required.

Modular ICS ISDN - Customer Profile

The ISDN option for Modular ICS is designed for the customer who wants the speed and reliability of digital lines with the added flexibility and features of ISDN. With ISDN-BRI lines, customers can integrate their ICS with ISDN equipment and applications, and take advantage of the central office services offered for ISDN.

Like T1, ISDN offers an economical option for backing up leased lines and supplies the digital lines needed to support the Computer Telephony Adapter 500dm.

Modular ICS XC - Customer Profile

A customer for Modular ICS equipped with XC software is looking for a larger system configuration (12-port expandability) to meet the needs of a large or growing company. They want integration with the latest technology, such as voice processing, T1 trunking, mixed analog/digital configuration that will maximize their system use.

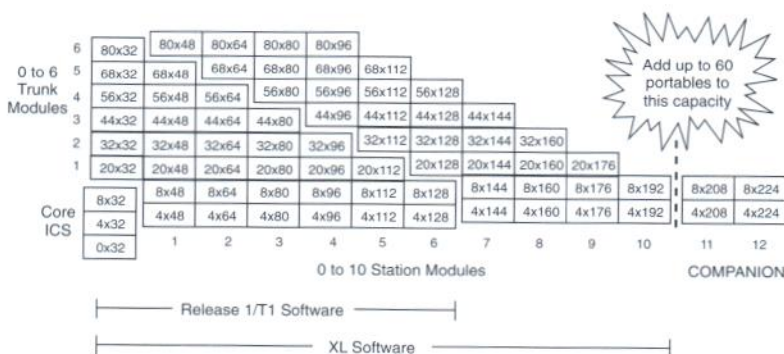
For a business that currently owns a Modular ICS, XC software is an easy and cost-effective way to upgrade to a more advanced system with more possibilities for integration.

A customer for Modular ICS equipped with XC software is looking for Nortel Companion mobility functionality using the latest technology that will allow employees to be easily accessible anywhere in the building or on the surrounding grounds.

A business that implements Nortel Companion will be part of a leading edge company that is making use of the maximum flexibility needed to meet the ever-increasing demands on employees and to survive in today's highly competitive market.

Modular ICS Configuration

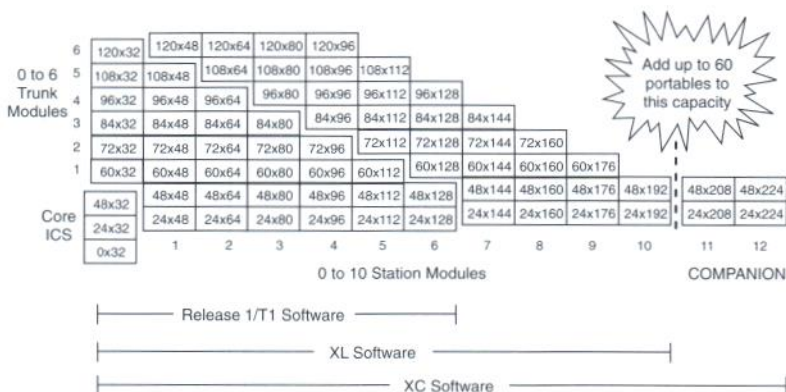
This chart shows possible configurations for a Modular ICS connected to analog trunks. It shows two Analog Trunk Cartridges (ATC) and no Digital Trunk Interface (DTI) or Basic Rate Interface (BRI) Cartridges installed in the ICS. The configuration capacity depends on the software cartridge.



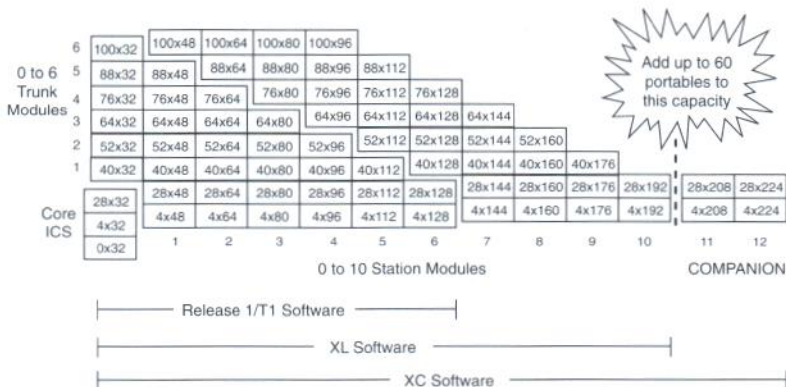
Note 1: The XL Software Cartridge is not available for new system sales. It has been replaced with XC Software.

Note 2: These configuration charts are examples only and do not encompass the full range of trunking options associated with ISDN-BRI interface cartridges or E&M trunk cartridges.

This chart shows possible configuration options for a Modular ICS connected to T1 trunks. It shows two DTI Cartridges and no ATC installed in the ICS. The configuration capacity depends on the software cartridge.



This chart shows possible configuration options for a mixed ICS connected to both T1 and analog trunks. It shows one ATC and one DTI Cartridge installed in the ICS. The configuration capacity depends on the software cartridge.

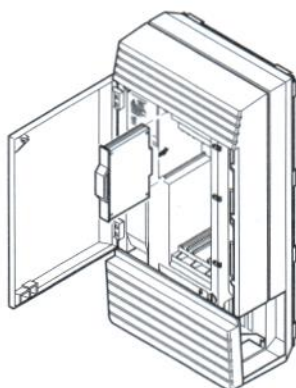


Modular ICS Expansion

The Modular ICS system can support up to 12 additional modules, each connected to the core unit via a fiber DS-30 connector. The table below summarizes the expansion capability of the Modular ICS.

Expansion Port	Fiber Trunk Module	Fiber Station Module	Analog Station Module		
1	Supports LS/DS, CI, DID, E&M and ISDN-BRI	Each module supports the addition of 16 incremental digital station ports. (Note 1)	Each port supports an Analog Station Module for 8 ports of analog connectivity. A second ASM may be daisy-chained to the first ASM to provide a total 16 ports of analog connections per fiber expansion port.		
2					
3	Supports LS/DS, CI, DID and E&M				
4					
5					
6					
7	Not supported				
8					
9					
10					
11	Reserved for Companion Base Stations	Reserved for Companion Base Stations			
12					
Note 1:			For systems with less than 12 ports of expansion, Companion Base Stations must be connected to the two highest fiber expansion ports.		

Modular ICS Core Hardware



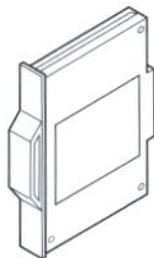
Description

Length:	63 cm (24.8 in.)
Width:	30 cm (11.8 in.)
Depth:	17 cm (6.7 in.)
Weight:	14 kg (30.8 lb.)
Color:	Dolphin Grey

- The Norstar Modular ICS is a module and cartridge-based system offering easy installation, maintenance, expansion and customization.
- The Modular ICS supports digital T1 lines and Basic Rate Interface ISDN circuits as well as Analog Loop Start, CI, DID and E&M lines.
- All lines are supported through Cartridges installed in either the core Modular ICS or Trunk Modules (see configuration charts on the previous pages).
- The removable power supply eliminates the need to send the entire ICS in for repair if the power supply fails.
- Modular ICS customers looking expand to a large system will make use of the capability of Modular ICS with XC software to grow to 272 ports.
- Modular ICS XC offers Nortel Companion wireless functionality, allowing customers to install up to 32 Base Stations that support up to 60 portable handsets.

- Other features include support of 32 stations on the core Modular ICS, a single locking door, a label for customer configuration information, and an optional Fiber Cable Management Kit to speed installation and ensure proper handling of the fiber connection cables.
- The Modular ICS has one emergency transfer port per trunk cartridge slot if an analog trunk cartridge is installed in the Modular ICS. In a system with Digital Trunk Cartridges only, emergency service is not supported.
- Cartridge slots in the ICS can house:
 - One-piece software feature cartridge,
 - Services Cartridge,
 - Fiber or Copper Expansion Cartridges,
 - Combination Expansion and Services Cartridges,
 - Trunk Cartridges (including the Digital Trunk Interface Cartridge and ISDN-BRI Cards).

Software Feature Cartridge



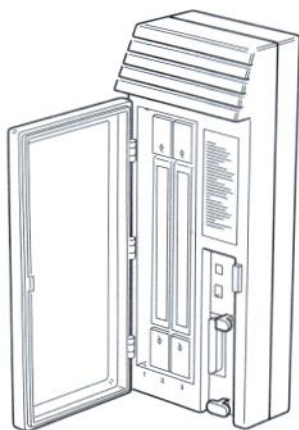
- The Feature Cartridge contains the system software for the Modular ICS's operation, including the call processing, administration, and maintenance features and functions.
- The one-piece cartridge contains customer programmable software (ROM).
- Customer data (RAM) is stored on the ICS and is preserved during software upgrades and power outages.
- The XC Feature Cartridges contain all system software of the Modular ICS plus wireless functionality and increased expandability capabilities.
- Four versions of software are available:
 - NA-MICS-DR 2.0 - Expanded feature capability. Replaces Release 1/T1 and DR 1.1. Supports up to 6 expansion modules.
 - CDA-MICS-XC-2.0 - Expanded capability and Nortel Companion wireless functionality (CT2 +). Available in Canada. Supports up to 12 expansion modules.

- USA-MICS-XC-2.0 - Expanded capability and Nortel Companion wireless functionality (Etiquette). Available in the US. Supports up to 12 expansion modules.
- Release 1, Centrex- Provides transparent operation of popular Centrex features. It does not support T1, ISDN-BRI, Nortel Companion or expansion beyond 6 ports.

Note: The XL Software Cartridge is not available for new system sales. It has been replaced with XC software.

See Appendix A for information about versions of the 8x24 feature cartridge.

Fiber Trunk Module (12x0)



Description

Length: 625 mm (24.6 in.)

Width: 198 mm (7.8 in.)

Depth: 171 mm (6.73 in.)

Weight: 5142 g (11.33 lb.)

Color: Dolphin Grey

- To add trunk interfaces to the core Modular ICS, Fiber Trunk Modules may be connected to the Modular ICS by a fiber cable.
- Each Fiber Trunk Module (TM) holds up to three Trunk Cartridges. The number of additional lines depends on the cartridge being installed:

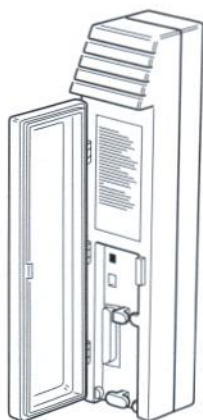
Card	Lines per card
ISDN-BRI	8
LS/DS	4
CI	4
DID	4
E&M	2
1A2	2

- There is one emergency transfer port per Trunk Module.
- Compatible with all existing and new Analog Trunk Cartridges. Digital Trunk Interface (DTI) Cartridges and the Services Cartridge are not supported in the Fiber Trunk Module.
- ISDN-BRI Cards are supported only on Trunk Modules 3 and 4 (2-port expansion), or Trunk Modules 7 or 8 (6 or 12-port expansion).

Note: Copper Trunk Modules used with the Modular 8x24 are

also compatible with the Modular ICS and can be used for an upgrade. Copper Trunk Modules connect to the core with a Copper DS-30 cable and a 2 or 6 port Modular ICS Copper Expansion Cartridge.

Fiber Station Module (0x16)



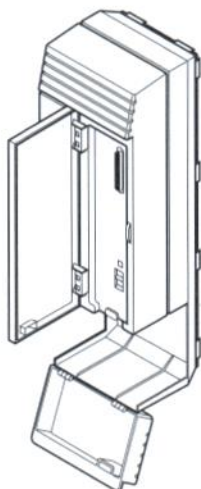
Description

Length:	625 mm (24.6 in.)
Width:	98 mm (3.85 in.)
Depth:	171 mm (6.73 in.)
Weight:	2415 g (5.31 lb.)
Color:	Dolphin Grey

- To add additional station ports to the Modular ICS core, Fiber Station Modules may be connected by a fiber cable.
- Each Fiber Station Module expands the core Modular ICS system by up to 16 station ports.

Note: Copper Station Modules used with the Modular 8x24 are also compatible with the Modular ICS and can be used for an upgrade. Copper Station Modules connect to the core with a Copper DS-30 cable and a 2 or 6 port Modular ICS Copper Expansion cartridge.

Analog Station Module (ASM)



Description

Length:	630 mm (25 in.)
Width:	150 mm (5.9 in.)
Depth:	170 mm (6.5 in.)
Weight:	3.7 kg (8.3 lb.)
Color:	Dolphin Grey

- The Analog Station Module is compatible with Modular ICS products with fiber interface capabilities.
- Each ASM can support 8 analog devices (data or voice) with speeds up to and including 33.6 Kbps. (Note: the maximum data transmission rate is subject to the quality of the end-to-end channel and cannot be guaranteed.)
- Each ASM has 3 connectors: one DS-30 fiber link for daisy-chaining, and one 50-pin male amphenol connector that provides connections for up to 8 analog devices.
- The ASM connects to a Fiber Expansion Cartridge on the core Modular ICS with a DS-30 fiber cable. Either a 2 or 6 port Fiber Expansion Cartridge may be used.

Because this uses only half the DS-30 capacity, the second DS-30 jack on the ASM may be used to daisy-chain a second ASM to the first. A maximum of two ASMs, providing a total of 16 analog ports, can be connected through a single DS-30 port on an Expansion Cartridge.

- A third ASM can connect via a DS-30 fiber link to the next available port on the Expansion Cartridge. A fourth ASM can be daisy-chained to the third ASM. The total number of ASMs that can be installed on a system is determined by the number of DS-30 ports available on the core.
- Two versions of the ASM are available:
 - Standard Analog Station Module (ASM) M0x8A
 - Analog Station Module with Message Waiting Indication (ASM with MWI) M0x8M
- The ASM with MWI supports visual message indication (on 2500 sets with a message lamp provided) or stuttered dial tone (when the handset is lifted). Message waiting indication may only be accomplished if the Modular ICS system is equipped with a Norstar voice messaging system.

(Note: the standard ASM does not provide visual message waiting indication but can be configured to provide a stuttered dial tone if connected to a Modular ICS with DR 1.1 software or later. The standard ASM cannot be upgraded to an ASM with MWI.)

- The standard ASM is compatible with all Modular ICS software releases. The ASM with MWI is compatible only with DR 1.1 and XC 1.1 software or later.
- The ASM and the ASM with MWI may be used in combination with each other and/or with existing ATA-2s, allowing for customized analog solutions. All features currently supported on the ATA-2 are supported by both versions of the Analog Station Module.
- The maximum loop length for any On Premise analog station is 4,000 feet.

Off Premise Extensions (OPX) are not supported from the ASM. The existing ATA-2 devices will still be used to support OPX extensions.

- CLASS/CMS capabilities and Disconnect Supervision are not supported on the Analog Station Module. This is consistent with ATA-2 functionality. For analog connections requiring Disconnect Supervision, a Voice Mail Interface Unit is required.
- The ASM has an integrated auto ranging 110 - 220 volt power supply and is approximately 1.5 times wider than the Fiber Station Module.

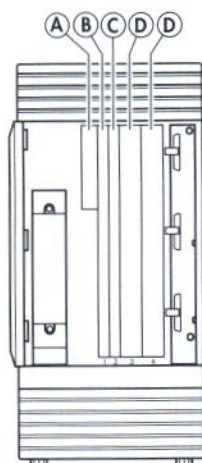
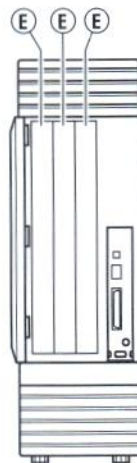
Modular ICS Cartridges

- Expansion Cartridges provide the connection point for expansion of the system via trunk or station modules.
- Services Cartridges contain the clocking services to support ISDN and T1.
- Interface Cartridges connect the Norstar system with the central office, and in the case of ISDN-BRI cartridges may be configured for station side ISDN devices.

Modular ICS Cartridge Compatibility

Cartridges	Modular ICS		
	Core	Fiber Trunk Module	Copper Trunk Module
Expansion			
MICS Fiber Expansion 2-port	√		
MICS Fiber Expansion 6-port	√		
MICS Copper Expansion 2-port	√ (Note 2)		
MICS Copper Expansion 6-port	√ (Note 2)		
Clocking Services/Expansion			
Services Cartridge	√		
MICS Combination Fiber 6-Port Services Cartridge	√		
Interface			
ISDN-BRI 2 U-Interface	√	√ (Note 1)	
ISDN-BRI 4 U-Interface	√	√ (Note 1)	
ISDN-BRI 4 S/T Interface	√	√ (Note 1)	
Digital Trunk Interface	√		
LS/DS Analog Trunk Cartridge	√	√	√
Caller ID Trunk Cartridge	√	√	√
E&M/DISA Trunk Cartridge		√	√
DID Trunk Cartridge		√	√
1A2 Trunk Cartridge		√	√
Note 1: ISDN-BRI 2 U-Interface, 4 U-Interface and 4 S/T Interface cartridges can be installed in Fiber Trunk Modules 1 and 2 only.			
Note 2: The use of Copper Expansion Cartridges and Copper Trunk and Station Modules precludes the use of T1, ISDN-BRI and Companion, and limits the growth of the Modular ICS to 6 expansion modules.			

Modular ICS Cartridge Placement

Modular ICS
Core UnitFiber Trunk
Module 1 or 2Fiber Trunk
Module 3 to 6

Modular ICS Core Unit

Slot A	MICS or MICS XC Software Cartridge
Slot B	Services Cartridge or combo 6 Port Services Cartridge
Slot C	2 Port, 6 Port or Combo 6 Port Services Cartridge
Slot D	2 Port "U", 4 Port "U" or 4 Port "S/T" ISDN-BRI Cartridges; Digital Trunk Interface, LS/DS Loop Start or CI Trunk Cartridges

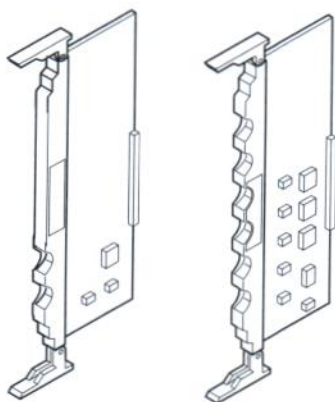
Fiber Trunk Module 1 or 2

Slot E	2 Port "U", 4 Port "U" or 4 Port "S/T" ISDN-BRI Cartridges; LS/DS Loop Start, CI, DID or E&M Trunk Cartridges
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Fiber Trunk Module 3 to 6

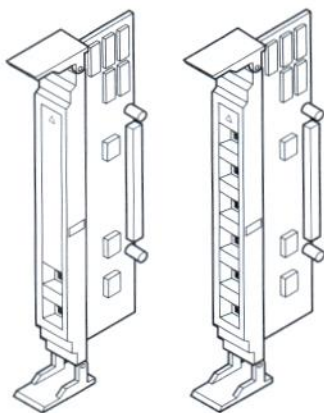
Slot E	LS/DS Loop Start, CI, DID or E&M Trunk Cartridges
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Fiber Expansion Cartridges



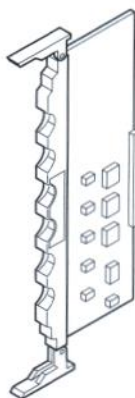
- Two or six-port Fiber Expansion Cartridges connect additional Fiber Trunk, Fiber Station, or Analog Station Modules to expand core Modular ICS capacity.
- The Fiber Expansion Cartridges fit into slot 2 (a half-width slot) of the ICS, when used with R1/T1 software. The other half width slot (slot 1) is reserved for the Services Cartridge.
- With XC software, two Six-Port Expansion Cartridges can be installed in the Modular ICS, the first in Slot 2, the second in Slot 1.
- Compatible with the Module ICS core only.

Copper Expansion Cartridges



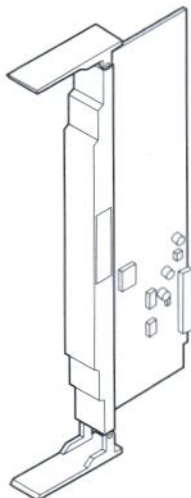
- Two or six-port Copper Expansion Upgrade Cartridges can be used in an upgrade scenario to connect existing Copper Trunk and Station Modules to the Modular ICS.
- MICS Copper Expansion Cartridges are twice the width of Fiber Expansion Cartridges. They fit into slot 1 (a half-width slot) but also cover slot 2 of the ICS.
- Compatible with the Module ICS core only.
- The use of Copper Expansion Cartridges and Copper Trunk and Station Modules precludes the use of T1, ISDN-BRI and Companion, and limits the growth of the Modular ICS to 6 expansion modules.

Combination Fiber 6-Port Services Cartridge



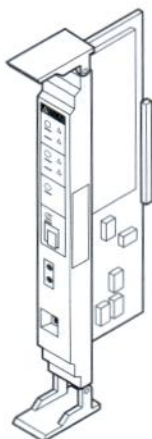
- The Modular ICS Combination Fiber 6-Port Services Cartridge connects additional Fiber Trunk and/or Station Modules to expand the core capacity of a Modular ICS equipped with XL or XC software to a maximum of 12 expansion ports (272 total ports maximum configuration).
- This cartridge also contains the clocking service required to support T1 on the DTI cartridge or ISDN on an ISDN-BRI Cartridge.
- The Combination Fiber 6-Port Services Cartridge fit into slots 1 & 2 of the Modular ICS and works only with XC software and fiber connections.
- Compatible with the Module ICS core only.

Services Cartridge



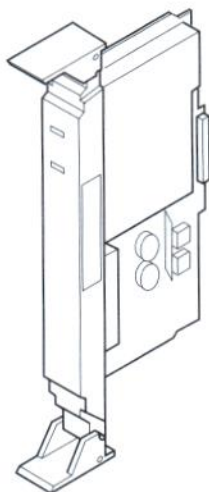
- Provides the clocking service necessary for digital networks.
- Required if using DTI cartridge(s) or ISDN-BRI Interface cartridge(s).
- One services cartridge supports all clocking required, regardless of the number or mixture of DTIs and/or ISDN-BRI Interface cartridges.
- Uses Slot 1 of the core ICS and cannot be used if a Copper Expansion Upgrade Cartridge is installed, covering both Slots 1 and 2.
- Compatible with the Module ICS core only.

Digital Trunk Interface Cartridge



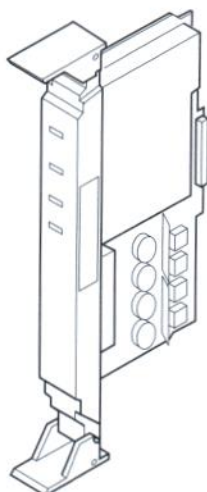
- The Digital Trunk Interface (DTI) Cartridge provides access for up to 24 digital T1 channels. It comes equipped with built-in Channel Service Unit (CSU) functionality to support the integrity of digital signaling.
- The core Modular ICS can support up to two DTIs for a total of 48 T1 (digital) lines. DTIs cannot be installed in Trunk Modules.
- Requires either the Services Cartridge or the Combination Fiber 6-Port Services Cartridge.
- Compatible with the Module ICS core only.

2-Port U Interface ISDN-BRI Cartridge



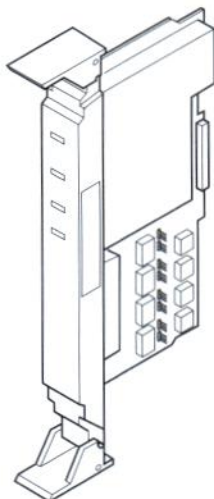
- Supports two ISDN-BRI U- Interfaces per cartridge.
- Integrated Network Termination Type 1 (NT1) functionality.
- Interfaces can be individually configured to be a network interface or a station side equipment interface.
- Can be configured to support a D-channel packet interface.
- Powered by the cartridge slot connector.
- LED on cartridge faceplate gives visual indication of circuit status (activated or deactivated).
- Requires either the Services Cartridge or the Combination Fiber 6-Port Services Cartridge.
- Compatible with Compact ICS and Modular ICS.

4-Port U Interface ISDN-BRI Cartridge



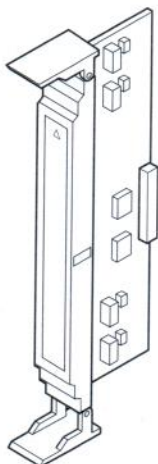
- Supports four ISDN-BRI U-Interfaces per cartridge.
- Integrated Network Termination Type 1 (NT1) functionality.
- Interfaces can be individually configured to be a network interface or station side equipment interface.
- Can be configured to support a D-channel packet interface.
- Powered by the cartridge slot connector.
- LED on cartridge faceplate gives visual indication of circuit status (activated or deactivated).
- Requires either the Services Cartridge or the Combination Fiber 6-Port Services Cartridge.
- Compatible with Compact ICS and Modular ICS.

4-Port S/T Interface ISDN-BRI Cartridge



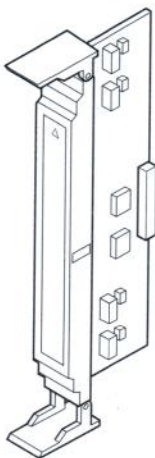
- Supports four ISDN-BRI S/T Interfaces per cartridge.
- Interfaces can be individually configured to be a network interface or a station side equipment interface.
- Can be configured to support a D-channel packet interface.
- Powered by the cartridge slot connector.
- LED on cartridge faceplate gives visual indication of circuit status (activated or deactivated).
- Requires either the Services Cartridge or the Combination Fiber 6-Port Services Cartridge.
- Compatible with Compact ICS and Modular ICS.

LS/DS Analog Trunk Cartridge



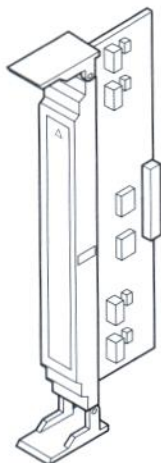
- Provides basic access to a maximum of four Central Office analog lines.
- All LS (Loop Start)/DS (Disconnect Supervision) Trunk Cartridges have Disconnect Supervision capability and are labeled with "DS" on the faceplate.
- Also called the New DS Loop Start Trunk Cartridge.
- Compatible with the Modular ICS core, Fiber and Copper Trunk Modules, the Compact ICS core and the Modular 8x24 Copper Trunk Module.

Caller ID Analog Trunk Cartridge



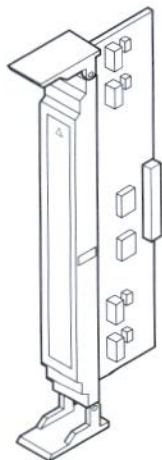
- The Caller Identification (CI) Trunk Cartridge has the same functionality as the LS/DS Trunk Cartridge but with the added capability to detect and translate incoming CMS/CLASS information for display on Norstar sets.
- The CI Trunk Cartridge is required when any CMS/CLASS lines terminate on a Trunk Module or a Modular ICS or Compact ICS core.
- Provides access for up to four Central Office analog lines.
- Compatible with the Modular ICS core, Fiber and Copper Trunk Modules, the Compact ICS core and the Modular 8x24 Copper Trunk Module.

E&M/Direct Inward System Access (DISA) Trunk Cartridge



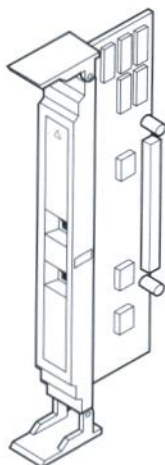
- Provides E&M Tie line private networking between Norstars in a private networking configuration.
- Contains 2 E&M Type II Trunk interfaces.
- The cartridge also contains 2 DTMF receivers required to support DISA on Loop-Start Trunks.
- Compatible with the Modular ICS Fiber Trunk Module and the Modular 8x24 Copper Trunk Module.

Direct Inward Dialing (DID) Trunk Cartridge



- Routes calls from the public network directly to sets, bypassing an attendant, reducing traffic to the central answering position.
- All DID Trunk Cartridges have Disconnect Supervision.
- DID trunking is supported on the Modular 8x24 and Modular ICS systems but not supported on the Norstar 3x8 or Compact ICS systems.
- DID trunks do not support CMS/CLASS services.
- Provides access for up to four (4) CO lines.
- Compatible with the Modular ICS Fiber Trunk Module and the Modular 8x24 Copper Trunk Module.

1A2 Trunk Cartridge



- The 1A2 provides the interface for 1A2 telephone systems and/or single line sets.
- It provides a visual indication (set coverage) for lines appearing on both Norstar and 1A2 key systems.
- The 1A2 Trunk Cartridge works with Centrex software only.
- Provides access for up to four (4) CO lines.
- Compatible with the Modular ICS Fiber Trunk Module and the Modular 8x24 Copper Trunk Module.

Norstar 3x8 Overview

Norstar 3x8 is a conveniently sized, easy to install, small business system that delivers many advanced features.

Norstar 3x8 Customer Profile (Small Business)

A Norstar 3x8 customer is a business that wants a full-featured key system because it offers: on-site equipment that can be customized, features that manage a high level of internal calling patterns (e.g., paging, intercom, call handling), and the opportunity to control and maintain the communications system. The business requires up to a maximum of three lines and eight stations.

Norstar 3x8 Customer Profile (Home-based Business)

The Norstar 3x8 home-based business customer has needs similar to the small business profile, but that will likely have the need for smaller configurations and at least one full-featured set (M7310) to meet many of their business operating needs. They will also likely have the need for more specialized applications, such as third party additions (i.e., door entry locks or paging systems).

Norstar 3x8 Hardware



Description

Length:	330 mm (13 in.)
Width:	240 mm (9.5 in.)
Depth:	75 mm (3 in.)
Weight:	2 kg (4.4 lb.)
Color:	Dolphin Grey

- 3x8 is a self-contained unit that functions with built-in DR5 software, with Disconnect Supervision and Calling Line ID interface capabilities.
- This system can be configured with up to three lines and eight stations (3x8).
- The Norstar 3x8 offers advanced Norstar functionality with many cost-saving set and system features not available with competitive systems.
- Custom programming enables a business to configure the system to best suit its particular needs.
- The Norstar 3x8 is easy to install, and comes in a convenient size that can fit virtually anywhere without taking up too much space.
- External (wall mountable) power supply.

Note: See Appendices for information on Compact 6x16, Modular 8x24 and other legacy products.

Software

3

Overview

Today, most key systems come with many powerful features. To have the competitive edge, the customer must understand how easy it is to use Norstar features. To simplify feature access, Norstar offers:

- LCDs which lead the user through features using visual prompts
- easily remembered, simple access codes
- memory buttons that save frequently-used feature access codes
- single-button access programming to activate saved features.

In addition, Norstar's ease of programming and proven reliability provide a high level of customer satisfaction.

Norstar ICS Release 2.0 New Features

The Norstar Compact and Modular ICS 2.0 provide all the features previously available on Release 1.0 software, plus the following new features and enhancements:

Security enhancement

- access control to Link, Last Number Redial and Saved Number Redial

Call Identification

- External (PSTN) calls - Voice over B Channel
- Calling Line Identification

Call Park enhancement

- round robin code assignment

Digital Network Adapter features

- Incoming and outgoing data calls
- Call logging
- Restrictions

Messages

- Static Time and Date

ISDN features

- Basic call
- D-Packet (Point of sale terminals)
- Calling Number Identification Services
- Sub-addressing

Maintenance features

- Provisioning of ISDN loops
- TEI Status

Remote Administration features

- Backup and restore
- Alarm reporting

Enhanced Norstar Companion features on Modular ICS 2.0

- Page
- Call Park
- Dial-By-Name (requires Norstar Voice Mail 3.0)
- C3050 Integrated Voice Mail Support (Canada)

Access Control to Link, LNR and SNR

Prior to this enhancement, all users could access the Link or Hook switch Flash Feature 71. This presents a possible security issue because this feature can be used to obtain a second dial tone from the central office, and then originate another call without Norstar call restrictions applying. With the enhancement, the feature is available for all sets by default, but the System Administrator now has the option to remove access to the feature on a set-by-set basis.

Calling Number Identification Services (CNIS)

This feature allows the network to deliver Calling number or User provided Calling Number Identification Services. Norstar delivers Caller Line Identification to all Norstar telephone sets with a ringing line appearance. This feature can be used in conjunction with CTI (TAPI) products.

Static Time and Date

This modification allows users the option of clearing the "Message(s) for You" display in favor of the current time and date information. The message display button (softkey) is still presented to retrieve messages. This feature is only available on the M7310 and M7324 telephones.

Sub-Addressing

Norstar ICS supports sub-addressing for ISDN devices. Providing the devices themselves support this feature, one Norstar ISDN DN can be shared by devices with different sub-addresses. When the ISDN devices are installed, each device should be programmed to recognize the unique sub-addressing number assigned to it.

ISDN Basic Call - Access, Call Control & Signalling

Norstar ICS allows basic calls to ISDN-BRI loops by dialing a DN. All terminals on that loop can respond to the call providing the terminals are configured with the called DN. Per call Terminal Service Profile checking is supported for incoming and outgoing calls.

Enhanced system programming - Find Soft Key

Compact ICS Release 2.0 includes the redesigned administration and configuration programming structure introduced with the previous release. A new enhancement, "Find" soft key, has been added to reduce the number of key presses required during system programming.

Modular ICS Release 2.0 also includes the redesigned administration and configuration programming structure and the new "Find" soft key enhancement.

Call Park - Round Robin

The Call Park feature has been enhanced to give System Administrators the option to choose either linear or round robin call park codes. With linear codes, the system assigns the first free call park code for the call. This means that the first few call park codes are often used more frequently than the remaining codes. This can cause confusion when parked calls have hung up or been answered, and within moments a new call is parked using the same code. If the System Administrator chooses the Round Robin option, Call Park codes are assigned sequentially until the maximum number of codes is reached (currently 25) before starting again at the first code.

Enhanced Norstar Companion features on Modular ICS 2.0

- Call Park
 - Incoming calls can now be parked from C3050 Companion portable telephones (also applies to installed base of C3020 portables).
- Page
 - C3050 (and C3020) Companion portable telephones can use the Page feature to originate announcements.
- Wireless Dial-By-Name
 - The Dial-By-Name feature resident on Norstar Voice Mail can now be accessed from C3050 (and C3020) Companion portable telephones (requires Norstar Voice Mail 3.0).
- C3050 Integrated Voice Mail Support (Canada)
 - The C3050 Companion portable telephone has access to the full display and soft key feature support associated with Norstar Voice Mail on the Canadian versions of XC software (previously available in the US).

ISDN features

Industry trends indicate that the data needs of end users are becoming more sophisticated. Data applications are not only crucial for day-to-day operations, but also require more bandwidth than ever before. ISDN Basic Rate Interface (BRI) for Norstar addresses this growing demand and replaces today's analog modem technology with digital transmission speeds up to 128 kbps.

Compact ICS and Modular ICS 2.0 provide a flexible, scalable solution for customers who need high-speed information access or transfer. This includes small businesses who:

- have employees who telecommute and need access to company databases, networks or e-mail
- have employees who frequently travel to attend meetings
- collaborate with geographically dispersed people
- use multiple analog lines for telephone, fax and modem
- require data transfer or sharing of databases between multiple locations
- send and receive large data files, images, video, or sound files
- depend on voice communications via the telephone for conducting their business
- make regular dial-up connections to the Internet or other computer services

LAN Access

LAN connectivity, including LAN-to-LAN, LAN-to-host, and remote LAN, is one of the primary data applications driving the ISDN market. This application is particularly important to small businesses with lower volume LAN requirements. The dial-up nature of a BRI connection means the user only pays for actual transmission times rather than the expense of having a dedicated digital circuit.

The Norstar ICS brings digital connectivity to the desktop and allows employees high speed access to remote LAN's as needed. This application facilitates access to centralized database information, business-wide on-line applications and file transfers for operations management.

Values and benefits:

- Reduces costs - eliminates need for dedicated data lines
- Reduces costs - improves transmission time for large file transfers such as images, graphics, and x-rays
- Reduces costs - saves on the cost of inter-office couriers and employee inter-office travel time
- Improves employee productivity - employees no longer have to wait on couriers, analog modems, or other slower forms of communication to obtain the information they need
- Improves employee efficiency - easy access to records and resources

Internet Access

Anyone who has spent any time surfing the Internet knows how frustrating it can be to wait for graphics-intensive Web sites to download. The large files used to deliver graphics, sound, animation and video on the World Wide Web are making analog modems obsolete.

One third of all businesses currently use analog dial-up services for Internet access (IDC/Link, 1996). These business users are looking for an affordable way to increase interaction speed and reduce download time. ISDN provides them with an immediate solution.

Getting a high speed Internet access is easy with the Norstar Computer Telephony Adapter 500 *dm* (CTA 500*dm*) is used with a BRI U-Interface cartridge. The CTA 500*dm* is connected to a normal station loop and makes use of standard Norstar wiring to connect to both a Norstar telephone and the user's Personal Computer (PC). See the chapter on CTI for further information on the CTA 500*dm*.

Values and benefits:

- improved employee productivity - less time spent waiting for pages to load
- Reduced costs - faster transmission speeds
- Increase revenues - Internet commerce

Point of Sale (POS)

Plastic, magnetically striped cards have dramatically changed our purchasing processes. The need for timely, inexpensive credit and debit card authorization is a major requirement for small businesses. Up until now, retail merchants either had to incur the expense of dedicated analog links to the card service center or endure the delays of dialing the center and establishing a link through analog phone lines.

These plastic cards are also being used to transmit health insurance information, employee identification, student identification and other types of information that require verification from a centralized computer.

Norstar ICS with BRI offers an almost instantaneous connection to the worldwide X.25 packet network and credit authorization services. This service is more cost effective than dedicated analog lines, and the call setup and call tear down for an ISDN dial-up transaction is complete in 2 to 4 seconds compared to 20 to 50 seconds for analog dial-up transaction. And each BRI connection can service up to eight POS devices simultaneously.

Values and benefits:

- Increases customer satisfaction - wait time for a credit approval is minimal
- Increases employee productivity - serve more customers in less time
- Reduces costs - eliminates dedicated lines

Telecommuting

Telecommuting is an exploding business phenomenon across North America. There were an estimated 10 million telecommuters in the U.S. in 1996 and this number is expected to double by the year 2000 (NBI, 1996). Teleworkers include part-time home workers, full-time telecommuters and employees working from home after hours. These workers require access to corporate LANs for applications, databases and e-mail. In addition, they may make use of Internet access and desktop videoconferencing.

Values and benefits:

- Increases employee productivity - less time spent commuting
- Increases employee satisfaction - better balance between work and home responsibilities, lower stress
- Reduces workplace costs - less office space required, reduced turnover and hiring expenses

Videoconferencing

While video applications presently account for only a very small percentage of ISDN lines, ISDN is becoming the connection of choice for a growing number of video and screen share applications used for local, transcontinental and international meetings.

Values and benefits:

- Reduces travel time and expenses
- Increases employee productivity - less time in cars and on planes
- Reduces costs - dedicated videoconferencing lines no longer required
- Improves communications

Voice Over BRI

Approximately half of the ISDN lines installed today are at least partially used for basic voice communications (IDC/Link, 1997).

The faster call set up and tear down capability of ISDN can provide significant benefits to businesses, particularly in call center applications. In addition, ISDN network services provide a number of features that can enhance the usefulness of the Norstar system. These include such features as network call forward and Calling Number Delivery (Caller ID).

Values and benefits:

- Improves employee efficiency - faster call setup and tear down of calls
- Improves customer satisfaction - CLID delivery lets you know who is calling before you answer
- Improves communications - ISDN offers enhanced reliability and clarity

ISDN Network Services and Features

The Compact ICS and Modular ICS Release 2.0 support a variety of ISDN network features. These features are dependent on the type of Central Office facility serving the customers location, as well as the service provider who may or may not offer the network features.

In many cases the ISDN features provided by the network have been designed with a single BRI connection in mind (for example, to a residence). That's why the use of these features in a line-concentrated key system should be clearly understood by the customer to avoid unexpected results.

ISDN network feature	Description
Network Call Forward	Allows the customer to forward all incoming calls on a line to an external number. This feature is specific to a line and the customer must select the appropriate line key prior to invoking the feature. Once this feature has been invoked, the line will be available for outgoing calls only on the Norstar system.
Network Auto Dial	Allows a customer to automatically redial the last incoming number whether or not the call was answered. This feature is specific to a line and the customer must select the appropriate line key prior to invoking the feature.
Automatic Call Back	Allows a caller, who has been unable to reach a busy subscriber, to be notified when the subscriber goes on-hook. When the called line becomes idle, the calling line will ring. This feature is specific to a line and the customer must select the appropriate line key prior to invoking the feature. If another user selects the line and is on a call when the call back event occurs, the call back function will be dropped for the line and the customer will not receive another call back notification.
Calling Number Delivery	Provides the number of the calling party on the display of any of the Norstar telephones. This network capability comes with nearly all BRI services at no additional charge. Calling number delivery on ISDN is received immediately by the customer, unlike analog calling line identification which is provided between the first and second rings of the telephone. All the features and benefits currently available on Norstar for CLID will be supported on Calling Number Delivery.
Calling Number Delivery Blocking	Allows the customer to block the transfer of their number to the called party on a call-by-call basis.
Customer Originated Trace	Allows the recipient of obscene or harassing calls to request a trace of the last call received by their service provider. This feature is specific to a line and the customer must select the appropriate line key prior to invoking the feature.

ISDN network feature	Description
Unidentified Call Rejection	Allows the customer to reject incoming calls from parties who have a privacy feature that prevents the delivery of the calling number. This feature is specific to a line and the customer must select the appropriate line key prior to invoking the feature.
Network Speed Dial	Allows the customer to store frequently called numbers for speed dialing. This feature is specific to a line and the customer must select the appropriate line key prior to invoking the feature.
Multi-Line Hunt Groups	Allows calls made on the customer's prime DN to hunt to the next available line or BRI circuit if the prime DN is busy.
Packet Data Services	Norstar ICS Release 2.0 systems support the transmission of X.25 packet data over the "D" channel.

CMS/CLASS features

CMS/CLASS is a unique set of features and protocols. One of the prime features is the delivery of call-related information from a Central Office switch to a customer's premise. This information is delivered between the first and second ring. If the call is answered prior to delivery, the data is permanently lost.

One of the most popular CMS/CLASS features is Name and/or Number Delivery. Besides the obvious benefit of knowing who is calling before you pick up the phone, there are some significant marketing and sales benefits that can be derived from this information.

These Norstar features are available when CMS/CLASS is supplied on your telephone line and the Norstar system is equipped with DR5 or newer software plus appropriate hardware:

- Call Information Feature
- Calling Name and/or Number Display
- LOGIT Feature (Manual Logging)
- Long Distance Indicator

- Caller Log
 - Auto Bump On/Off
 - Automatic Redial
 - Caller's Name/Number
 - Logging Options
 - Long Distance Indicator
 - Optional Password Protection
 - Repeat Call Counter
 - Automatic Redial
- CO-based voice mail visual message notification

The following CO-based CMS/CLASS features also interact with Norstar to enhance Norstar's operation. Please note feature names and availability will vary from region to region.

- Automatic Callback (AC)
- Automatic Recall (AR)
- Calling Number Delivery Blocking
- Customer Originated Trace
- Distinctive Ringing/Call Waiting
- Selective Call Acceptance

Norstar Compact ICS Release 2.0 features

The Compact ICS provides a high degree of customization to suit individual user needs and provides the enhanced, integrated features that small businesses are requesting.

Norstar Compact ICS Release 2.0 includes all Release 1.0 and DR5 features. In addition, new features like full ISDN capability, provide a level of performance that is usually found only in much larger systems.

The Software Cartridge, an industry standard PCMCIA (Personal Computer Memory Card International Association), is used to run the system. It is approximately the size of a credit card and stores the system programming. The insertion slot on the core unit is cut away so the software load ID number can be read without removing the cartridge.

Two versions of the Software Cartridge are available based on the system requirements:

- Compact ICS Release 2.0 Standard Software
 - provides full feature capability for a maximum of 8 analog CO trunks or 16 digital ISDN-BRI circuits and 24 stations.
- Compact ICS Release 2.0 Restricted Software
 - provides full feature capability for a maximum of 4 CO trunks and 8 stations.

Built-in Auto Attendant

The built-in Auto Attendant in the Compact ICS automatically answers and directs incoming calls, which can reduce or eliminate the workload for the person who answers incoming calls for an office.

The Automated Attendant function is turned on and off within the system programming. The individual features, System Answer and Custom Call Routing, can be turned on and off from any telephone in the system. This flexibility give the small business many options for handling incoming calls quickly and professionally.

Auto Attendant is a productivity tool that can provide stand-alone or supplementary telephone answering support 24 hours per day, 7 days per week. The Auto Attendant function can handle up to a maximum of 3 calls at once. Two calls are guaranteed; the third call is dependent on system traffic.

The Auto Attendant allows a business to handle a large volume of calls in an efficient and professional manner, reducing operating costs and freeing up personnel to perform other duties.

System Answer

The System Answer feature simplifies the job of answering calls by making sure all calls are answered within a set number of rings. When calls go unanswered at the telephone monitored by System Answer (the attendant set), Norstar answers the call and plays a greeting. It then puts the call on hold until the attendant can retrieve it.

If the caller knows the internal number they want to reach, or is using the Norstar remote features, they can dial while the System Answer greeting is playing. System Answer backs up the attendant in periods of heavy traffic - ideal for a business that needs external calls answered quickly and professionally.

System Answer only handles calls that ring at the "Attendant Set". All lines that appear on that set will be answered by System Answer while the feature is turned ON.

Custom Call Routing (CCR)

The Custom Call Routing feature can take over the job of answering and transferring calls. Lines programmed to be monitored by CCR will be answered after the programmed number of rings.

When someone calls on lines monitored by CCR, the system answers the call and plays a user recorded greeting. Callers using a tone dial set can then:

- enter an internal telephone number (a fast way for regular callers to reach someone directly)
- direct their call by pressing a single digit as instructed by the user recorded greeting. For example: "To reach Sales please press 7".
- reach an attendant by pressing zero
- access remote features.

Businesses can use two greetings with CCR: one for when their office is open and one for when it is closed. The business closed greeting may announce the business's office hours and offer the caller the option of dialing an internal number to reach someone who is working after hours. If the business has an answering machine connected to the internal ATA of the Compact ICS, the

caller may also be given the option of pressing a single digit to connect to the answering machine to leave a message.

CCR provides fast access for callers to a business without an attendant, or for a business which receives several calls to a particular person or group of persons - ideal for a business that has no dedicated person answering and routing calls.

Direct Extension Dialing

3

Both System Answer and CCR give the caller the opportunity to dial an internal telephone number or use remote feature access like direct inward system access (DISA). This means callers do not have to wait to reach the person they are calling and only the person they are calling has to handle the call.

The following table indicates the different scenarios that the Auto Attendant offers:

Compact ICS Status	Caller Will Hear	Then Caller Will Hear	Call Status
System Answer on Attendant busy on another call or away from desk	"Company Banner" User recorded, (5 seconds)	<i>"All operators are busy. If you know the extension that you want and are using a touch tone phone, please dial it now or hold the line and your call will be answered as soon as possible."</i> (Pre-recorded greeting)	Caller then dials the extension they want or their call is automatically put on hold at the attendant set.
CCR on, Business Open	"Company Banner" User recorded, (5 seconds)	"If you know the extension you want and are using a touch tone phone, please dial it now. Or, hold the line and your call will be answered as soon as possible." (Pre-recorded greeting) "To reach one of our sales agents, press 1; for accounting, press 2; for John Smith, press 3; to repeat this menu press *" (User recorded, 18 sec.)	Caller then dials the extension they want, directs call as per CCR menu, or their call is transferred to the attendant set where it will ring until answered.
CCR on, Business Closed	"Company Banner" User recorded, (5 seconds)	"Our offices are closed. Our business hours are 8 a.m. to 5 p.m. Monday through Friday Pacific Standard Time." (User Recorded) "If you know the extension that you want and are using a touch tone phone, please dial it now." (Pre-recorded greeting is repeated one time if caller does nothing) Thank you for calling" (Pre-recorded greeting)	Caller dials the extension they want or listens to the message one more time. If caller still does nothing the system automatically disconnects.

Norstar Modular ICS Release 2.0 features

The Modular ICS provides a high degree of customization and growth to suit individual user needs and provides the enhanced, integrated features and networking that small site businesses are demanding.

Modular ICS XC software also offers Norstar Companion mobility, allowing customers to install up to 32 Base Stations that support up to 60 portable telephones.

Norstar Modular ICS Release 2.0 includes all Release 1.0 and DR5 features. In addition, new features like full ISDN-BRI capability, provide a high level of performance and opportunity for leading edge business solutions such as networking and CTI.

Three versions of the Software Cartridge are available based on the system requirements and market (US or Canada):

- NA-Modular ICS Release 2.0
 - Expanded feature capability. Replaces Release 1/T1 and DR 1.1. Available in the US and Canada. Supports up to 6 expansion modules.
- USA-Modular ICS XC 2.0
 - Expanded capability and Norstar Companion mobility functionality (Etiquette). Available in the US. Supports up to 12 expansion modules.(Replaces USA-MICS-XL software.)
- CAN-Modular ICS XC 2.0
 - Expanded capability and Norstar Companion mobility functionality (CT2+). Available in Canada. Supports up to 12 expansion modules.

Note: On an XC system the maximum number of Norstar M7000 sets that can have the same line appearance is 50. This limit is reduced by 15 for every portable telephone that has an appearance of the line.

Enhanced Programming Structure

Norstar Modular ICS Release 2.0 includes the revised programming structure introduced with Release 1.0 of Compact ICS. Operations, administration, and maintenance programming have been redesigned to make both initial installation and adds, moves, and changes on the system easier. Programming is no longer split into alphabetic headings. The new programming structure has related feature settings grouped for easier access, giving improved navigation through programming.

- Faster access to often used programming sections, ****TIME** to change time and date and ****USER** to program User Preferences.
- “End of list” identification prompts prevent programmers from accidentally moving into the next section of programming before completing the section they are working in.
- The “levels of access” concept means that four levels of access for programming the system can be assigned through passwords. The password determines the level of access that the user sees when programming the system:
 - Installer Password: access to view and change all levels of programming.
 - System Coordinator Plus Password: access to view and change some of the more advanced settings and functions.
 - System Coordinator Password: access to view and change settings that are part of the day-to-day administration of the system.
 - Basic Password: access to view and change a limited number of feature codes - User Preferences, system time and date, turn System Answer on/off, turn CCR on/off.

The four levels of access allow the programming of day-to-day tasks to be delegated to selected personnel, without allowing them access to sensitive programming areas - the System Programmer has more time for more advanced programming. The new structure provides redundant and alternative views of data, which saves time and keystrokes. Experienced installers will need little, if any, additional training to program the Norstar Modular ICS.

Norstar ICS 2.0 Software Features

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new feature

Norstar ICS Features	CICS 1.0	CICS 2.0	MICS RIs 1T1 & CTX	NA MICS DR 1.1	NA MICS DR 2.0	USA MICS XL 1.0	USA MICS XC 1.0	USA MICS XC 1.1	CDA MICS XC 1.0	CDA MICS XC 1.1	NA MICS XC 2.0
Access control to Link, LNR, SNR		N			N						N
Accidental Disconnect	√	√	√	√	√	√	√	√	√	√	√
Administration & Configuration tree (new programming structure)	N	√			N						N
Analog Station Module Recognition				N	√			N		N	√
Answer Groups	√	√	√	√	√	√	√	√	√	√	√
Autodial Keys	√	√	√	√	√	√	√	√	√	√	√
• Number of Digits	24	24	24	24	24	24	24	24	24	24	24
• Store Facility Access	√	√	√	√	√	√	√	√	√	√	√
• Store Reach Through Codes	√	√	√	√	√	√	√	√	√	√	√
Automated Attendant	N	√									
• Custom Call Routing	N	√									
• System Answer	N	√									
Automatic Daylight Savings Time	N	√		√	√			√		√	√
Automatic Line Selection	√	√	√	√	√	√	√	√	√	√	√
Automatic Set Relocation	√	√	√	√	√	√	√	√	√	√	√
• Programmable On / Off	√	√	√	√	√	√	√	√	√	√	√
Auxiliary ringing	√	√	√	√	√	√	√	√	√	√	√
• For lines in service modes	√	√	√	√	√	√	√	√	√	√	√
Background Music	√	√	√	√	√	√	√	√	√	√	√
Busy Lamp Indication	√	√	√	√	√	√	√	√	√	√	√
• On line pool key	√	√	√	√	√	√	√	√	√	√	√
Button Inquiry	√	√	√	√	√	√	√	√	√	√	√
Call Display when busy	√	√	√	√	√	√	√	√	√	√	√
Call Duration timer	√	√	√	√	√	√	√	√	√	√	√

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new feature

Norstar ICS Features	CICS 1.0	CICS 2.0	MICS R1:1T1 & CTX	NA MICS DR 1.1	NA MICS DR 2.0	USA MICS XL 1.0	USA MICS XC 1.0	USA MICS XC 1.1	CDA MICS XC 1.0	CDA MICS XC 1.1	NA MICS XC 2.0
Call Forward	√	√	√	√	√	√	√	√	√	√	√
• All calls	√	√	√	√	√	√	√	√	√	√	√
• Call Forward Busy	√	√	√	√	√	√	√	√	√	√	√
• No Answer	√	√	√	√	√	√	√	√	√	√	√
• Override	√	√	√	√	√	√	√	√	√	√	√
Call Identification	√	E	√	√	E	√	√	√	√	√	E
Call Park	√	E	√	√	E	√	√	√	√	√	E
• number of Call Park codes	9	9	9	25	25	9	9	25	9	25	25
• Round robin code assignment		N		N	√			N		N	√
• Time outs (30-600 sec.)	√	√	√	√	√	√	√	√	√	√	√
• With Callback	√	√	√	√	√	√	√	√	√	√	√
Call Pickup	√	√	√	√	√	√	√	√	√	√	√
• Directed	√	√	√	√	√	√	√	√	√	√	√
• Pickup Groups (4 groups in CICS, 9 groups in MICS)	√	√	√	√	√	√	√	√	√	√	√
• Trunk Answer From Any Station	√	√	√	√	√	√	√	√	√	√	√
Call Queuing	√	√	√	√	√	√	√	√	√	√	√
Camp On	√	√	√	√	√	√	√	√	√	√	√
Central Answering Position	√	√	√	√	√	√	√	√	√	√	√
• CAP feature & autodial only	√	√	√	√	√	√	√	√	√	√	√
• BLF indication	√	√	√	√	√	√	√	√	√	√	√
Class of Service	√	√	√	√	√	√	√	√	√	√	√
• COS Passwords	19	19	100	100	100	100	100	100	100	100	100
• Dialing Abilities	√	√	√	√	√	√	√	√	√	√	√

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new feature

Norstar ICS Features	CICS 1.0	CICS 2.0	MICS R1s1T1 & CTX	NA MICS DR 1.1	NA MICS DR 2.0	USA MICS XL 1.0	USA MICS XC 1.0	USA MICS XC 1.1	CDA MICS XC 1.0	CDA MICS XC 1.1	NA MICS XC 2.0
CMS/CLASS											
• Call Information Session	√	√	N	N	√		N	N	N	N	√
• Caller Log	80	80	600	300	600	600	600	300	600	300	600
• Calling Name Display	√	√	N	N	√	√	N	N	N	N	√
• Calling Number Display	√	√	N	N	√	√	N	N	N	N	√
• LOGIT Feature	√	√	N	N	√	√	N	N	N	N	√
• Long Distance Indicator	√	√	N	N	√	√	N	N	N	N	√
CTA 500dm Features		N			N						N
• Incoming & outgoing data calls		N			N						N
• Call Logging		N			N						N
• Restrictions		N			N						N
Conference	√	√	√	√	√	√	√	√	√	√	√
• Independently hold two calls	√	√	√	√	√	√	√	√	√	√	√
• Using Privacy	√	√	√	√	√	√	√	√	√	√	√
Custom Business Product Compatibility	√	√	√	√	√	√	√	√	√	√	√
Delayed Ring Transfer	√	√	√	√	√	√	√	√	√	√	√
• To prime	√	√	√	√	√	√	√	√	√	√	√
• Programmable # of rings	√	√	√	√	√	√	√	√	√	√	√
Dial Attendant Set	√	√	√	√	√	√	√	√	√	√	√
• Direct Dial Digit	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Dialing Modes	√	√	√	√	√	√	√	√	√	√	√
• Standard	√	√	√	√	√	√	√	√	√	√	√
• Automatic	√	√	√	√	√	√	√	√	√	√	√
• Predial	√	√	√	√	√	√	√	√	√	√	√
Dial Mode for Lines - pulse/tone	√	√	√	√	√	√	√	√	√	√	√
Dial Pad Feedback	√	√	√	√	√	√	√	√	√	√	√
Direct Station Select Buttons	√	√	√	√	√	√	√	√	√	√	√

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new feature

Norstar ICS Features	CICS 1.0	CICS 2.0	MICS R151T1 & CTX	NA MICS DR 1.1	NA MICS DR 2.0	USA MICS XL 1.0	USA MICS XC 1.0	USA MICS XC 1.1	CDA MICS XC 1.0	CDA MICS XC 1.1	NA MICS XC 2.0
Disconnect Supervision	√	√	√	√	√	√	√	√	√	√	√
Discriminating Ringing at Set	√	√	√	√	√	√	√	√	√	√	√
Distinctive Ringing Cadence	√	√	√	√	√	√	√	√	√	√	√
Do Not Disturb	E	√	E	E	√	E	E	E	E	E	√
• DND On Busy	N	√	N	√	√	√	N	√	N	√	√
End-to-End Signaling	√	√	√	√	√	√	√	√	√	√	√
• Short tones internal	√	√	√	√	√	√	√	√	√	√	√
Enhanced Call Restrictions and Overrides	√	√	√	√	√	√	√	√	√	√	√
• Dialing Filers (max)	25	25	100	100	100	100	100	100	100	100	100
• Alternate toll restrictions	√	√	√	√	√	√	√	√	√	√	√
• System Speed Dial overrides	√	√	√	√	√	√	√	√	√	√	√
External Line Access Code	√	√	√	√	√	√	√	√	√	√	√
Flexible Numbering Plan	E	√	√	√	√	√	√	√	√	√	√
• Changing DN length	N	√	√	√	√	√	√	√	√	√	√
Group Listening	√	√	√	√	√	√	√	√	√	√	√
Handsfree	√	√	√	√	√	√	√	√	√	√	√
• Automatic	√	√	√	√	√	√	√	√	√	√	√
Hold	√	√	√	√	√	√	√	√	√	√	√
• Held Line Reminder	√	√	√	√	√	√	√	√	√	√	√
Host Delay	√	√	√	√	√	√	√	√	√	√	√
Host System Signaling	√	√	√	√	√	√	√	√	√	√	√
• Feature code compression	√	√	√	√	√	√	√	√	√	√	√
• Pause, run/stop, timed release	√	√	√	√	√	√	√	√	√	√	√
• Programmed release	√	√	√	√	√	√	√	√	√	√	√
• Recall / Link	√	√	√	√	√	√	√	√	√	√	√
Hot Line	√	√	√	√	√	√	√	√	√	√	√
Incoming Line Groups	N	√	√	√	√	√	√	√	√	√	√

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new feature

Norstar ICS Features	CICS 1.0	CICS 2.0	MICS Rls1T1 & CTX	NA MICS DR 1.1	NA MICS DR 2.0	USA MICS XL 1.0	USA MICS XC 1.0	USA MICS XC 1.1	CDA MICS XC 1.0	CDA MICS XC 1.1	NA MICS XC 2.0
Installer Password	√	√	√	√	√	√	√	√	√	√	√
Intercom Key Assignment	√	√	√	√	√	√	√	√	√	√	√
ISDN features		N			N						N
• Basic Call		N			N						N
• D-Packet (point of sale terminals)		N			N						N
• Calling Number ID (incoming calls only)		N			N						N
• Sub-addressing		N			N						N
Language Choice	E	√	√	√	√	√	√	√	√	√	√
Last Number Redial	√	√	√	√	√	√	√	√	√	√	√
• Number of Digits	24	24	24	24	24	24	24	24	24	24	24
Line Button Relocation	√	√	√	√	√	√	√	√	√	√	√
Line Names	√	√	√	√	√	√	√	√	√	√	√
Line Pool(s)	√	√	√	√	√	√	√	√	√	√	√
Line Redirection	√	√	√	√	√	√	√	√	√	√	√
Line Types (Pool, Public, Private)	√	√	√	√	√	√	√	√	√	√	√
Link/Flash (Recall)	√	√	√	√	√	√	√	√	√	√	√
Listen On Hold	√	√	√	√	√	√	√	√	√	√	√
Long Tones	√	√	√	√	√	√	√	√	√	√	√
Loss Plan	√	√	√	√	√	√	√	√	√	√	√
Messages (Send, Waiting, Reply)	√	E	√	√	E	√	√	√	√	√	E
• Static Time & Date		N			N						N
Multiple Line Appearances	√	√	√	√	√	√	√	√	√	√	√
Music/Tone/Silence On Hold	√	√	√	√	√	√	√	√	√	√	√
Night Service	√	√	√	√	√	√	√	√	√	√	√
• Flexible	√	√	√	√	√	√	√	√	√	√	√
• Service Modes	√	√	√	√	√	√	√	√	√	√	√

Key: ✓ Denotes availability, E - Denotes enhancements, N - Denotes new feature

Norstar ICS Features	CICS 1.0	CICS 2.0	MICS R1&T1 & CTX	NA MICS DR 1.1	NA MICS DR 2.0	USA MICS XL 1.0	USA MICS XC 1.0	USA MICS XC 1.1	CDA MICS XC 1.0	CDA MICS XC 1.1	NA MICS XC 2.0
Onhook Dialing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Automatic Dial	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Predial	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Standard	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Paging	E	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Internal (Multiple Zones)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Page Yes/No Per Set	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Page timeout		✓		N	✓			N		N	✓
• Page tone on/off		✓		N	✓			N		N	✓
Password Protection	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Preselection/Call Screening	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Prime Line Select	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Prime Set(s)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Multiple prime sets	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Priority Call	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Privacy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• On/Off	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Per Line	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ringing Line Preference	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Remote System Access	N	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Receiver Volume	N	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Receive Tones	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Restriction Override Password(s)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ring Again (Internal)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• On busy line pool	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Routing Service/Dest. Codes	N	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Saved Number Redial	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Service Modes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new feature

Norstar ICS Features	CICS 1.0	CICS 2.0	MICS RI&TT1 & CTX	NA MICS DR 1.1	NA MICS DR 2.0	USA MICS XL 1.0	USA MICS XC 1.0	USA MICS XC 1.1	CDA MICS XC 1.0	CDA MICS XC 1.1	NA MICS XC 2.0
Speed Dial: Personal	√	√	√	√	√	√	√	√	√	√	√
• All sets supported	√	√	√	√	√	√	√	√	√	√	√
• Number of Digits	24	24	24	24	24	24	24	24	24	24	24
Speed Dial: System	√	√	√	√	√	√	√	√	√	√	√
• Number of Entries	70	70	70	70	70	70	70	70	70	70	70
• Number of Digits	24	24	24	24	24	24	24	24	24	24	24
• Name Support	√	√	√	√	√	√	√	√	√	√	√
Station Set Test	N	√			N						N
System Version	√	√	√	√	√	√	√	√	√	√	√
Telephone Admin Lock	√	√	√	√	√	√	√	√	√	√	√
Time /Date Display	√	√	√	√	√	√	√	√	√	√	√
Transfer	√	√	E	E	√	√	E	E	E	E	√
• Immediate	√	√	√	√	√	√	√	√	√	√	√
• With announcement	√	√	√	√	√	√	√	√	√	√	√
• With Callback	√	√	√	√	√	√	√	√	√	√	√
• Over Public Network	√	√	√	√	√	√	√	√	√	√	√
Unsupervised Conference	√	√	√	√	√	√	√	√	√	√	√
User programmable feature keys	√	√	√	√	√	√	√	√	√	√	√
Voice Call	√	√	√	√	√	√	√	√	√	√	√
Voice Call Deny	√	√	√	√	√	√	√	√	√	√	√

Norstar 3X8 Software Features

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new features

Norstar 3x8 Features	DR1	DR5
Accidental Disconnect	√	√
Answer Buttons		N
Autodial Keys	√	E
• Number of Digits	16	24
• Store Facility Access		√
• Store Reach Through Codes		√
Automatic Line Selection	√	√
Automatic Set Relocation	√	E
• Programmable on / off		√
Auxiliary Ringing	√	E
• For lines in Service Modes	Night Service	√
Background Music	√	√
Busy Lamp Indication	√	E
• On M7324 DSS keys		√
• On line pool key		√
Button Inquiry	√	E
• Examine speed dial numbers		√
Call Display When Busy	√	√
Call Duration Timer	√	√
Call Forward	√	E
• All Calls	√	√
• Call Forward Busy		√
• Forward No Answer Delay		√
• No Answer		√
• Override	√	√
Call Identification (Internal Calls)	√	√

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new features

Norstar 3x8 Features	DR1	DR5
Call Park		N
• Prefix Digit		0-9
• Time Outs (30 - 600 sec.)		√
• With Callback		√
Call Pickup	√	E
• Directed		√
• Pickup Groups (4 groups)	√	√
• Trunk Answer from Any Station	√	√
Call Queuing		N
Camp On		N
Central Answering Position		N
• (CAP features & autodial only)		
Class of Service		N
• COS Passwords		20
• Dialing abilities		√
CMS/CLASS		N
• Call Information Session		N - 80 calls
• Caller Log		N - 80 calls
• Calling Name Display		N
• Calling Number Display		N
• CO VMail Message Waiting Indicator		N
• LOGIT Feature		N
• Long Distance Indicator		N
Conference	√	E
• Independently hold two calls		√
• Unsupervised		√
• Using Privacy		√
Custom Business Products Compatibility		N
Delayed Ring Transfer	√	E
• To Prime	√	√
• After programmable number of rings		√

Key: $\checkmark$ Denotes availability, **E** - Denotes enhancements, **N** - Denotes new features

Norstar 3x8 Features	DR1	DR5
Dial "X" Set (Direct Dial Set)	$\checkmark$	E
• Direct Dial Digit	0 only	0-9
• Destination Set	21 only	Flexible
Dialing Modes	$\checkmark$	E
• Standard	$\checkmark$	$\checkmark$
• Automatic		$\checkmark$
• Predial		$\checkmark$
Dial Mode for Lines - pulse/tone	$\checkmark$	$\checkmark$
Dial Pad Feedback	$\checkmark$	$\checkmark$
Direct Station Select Buttons	$\checkmark$	$\checkmark$
Disconnect Supervision		N
Discriminating Ringing at Set	$\checkmark$	$\checkmark$
Distinctive Ringing Cadence	$\checkmark$	$\checkmark$
Do Not Disturb	$\checkmark$	$\checkmark$
End -to-End Signaling	$\checkmark$	E
• Long tones - External		$\checkmark$
• Long tones - Internal		$\checkmark$
• Long tones - On Ext. paging port		$\checkmark$
• Short tones - External	$\checkmark$	$\checkmark$
• Short tones - Internal		$\checkmark$
External Line Access	$\checkmark$	$\checkmark$
Flexible Call Restrictions (on a per line basis)	Uses Tables	Filters
• Dialing Filters (max)		25
• Filter Restrictions per System (max)		200
• No. of digits per restriction	10	15
• No. of digits per exception/override	14	16
• Restrictions per filter (max)		48
Flexible Numbering Plan		N
• adminable DN's, Call Park Prefix,		$\checkmark$
• Dial X" code, Line Pool codes		$\checkmark$
• Only data calls dropped during changes		$\checkmark$

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new features

Norstar 3x8 Features	DR1	DR5
Group Listening		N
Handsfree	√	E
• Answerback	√	√
• Automatic		√
• With Mute Capability	√	√
Hold	√	E
• Automatic	√	√
• Exclusive	√	√
• Held Line Reminder	√	√
• Reminder Delay Range (seconds)	30-120	30-180
• I-Hold/U-Hold/Mutual Hold	√	√
• Listen on Hold	√	√
Host Delay		N
Host System Signaling (Called Centrex/PBX features on DR1)	√	E
• Feature code compression		√
• Pause, run/stop, timed release	√	√
• Programmed release		√
• Recall / Link	√	√
Hot Line - External, Internal & none		N
Installer Password		N
Intercom Key Assignment	√	√
Language Choice	√	√
Last Number Redial	√	E
• Number of Digits	16	24
• Selects facilities used on original call		√
• Convert to auto/speed dial		√
Line Button Relocation		N
Line Name		N

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new features

Norstar 3x8 Features	DR1	DR5
Line Pool	√	E
• Number of Pools	1	3
• Ring Again on Busy Pool		√
• Pool Access Code	9	Up to 4 digits
Line Selection	√	E
• Manual	√	√
• Preselection		√
Line Types (Pool, Public, Private)	√	√
Line Redirection		N
• allow/deny per set, redirecting burst		√
Link	√	√
Listen On Hold	√	√
Long Tones		N
Loss Plan	√	√
Messages (Send, Waiting, Reply)	√	√
Multiple Line Appearances	√	√
Music/Tone/Silence On Hold	√	√
Onhook Dialing	√	E
• Automatic Dial		√
• Predial		√
• Standard	√	√
• Using special features (i.e., last number redial)	√	√
Paging	√	E
• On/Off on a per set basis		√
• Internal zones		3
• External speaker	√	√
• Long tones on paging port		√
• Receive page Y or N per set	√	Zones
Preselection/Call Screening	√	√
Prime Line Select	√	√

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new features

Norstar 3x8 Features	DR1	DR5
Prime Set	√	E
• Call forward to prime set		√
• Call back to prime	√	√
• Delayed ring transfer (DTR) to prime	√	√
• Number of Rings until DRT	3	1,2,3,4,6 or 10
Priority Call - per set, on /off option		N
Privacy	√	E
• On Lines	√	√
• Control		√
Receive Tones Y/N (ATA tone pass through)		N
Release	√	√
Ring Again (Internal)	√	E
• On Busy	√	√
• On Busy Line Pool		√
• On No Answer		√
Ringing Line Preference	√	√
Saved Number Redial		N
• 24 digit & previous line		√
Service Modes		N
Set Names	√	√
Speed Dial: Personal	√	E
• Sets supported	M7208	All Sets
• Number of Digits	16	24
• Restriction Override Capability		√
• Name Support		√
• Display Digits Y/N		√
• Line Selection		√

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new features

Norstar 3x8 Features	DR1	DR5
Speed Dial: System	√	E
• Number of entries	30	70
• Number of Digits	16	24
• Name Support		√
• Restriction Override Capability		√
• Display Digits Y/N		√
• Line Selection		√
System Version		N
Telephone Admin Lock		N
Time/Date Display	√	E
• Show time temporarily during call		*
Transfer	√	E
• Number of rings for callback		3,4,5,6 or 12
• Over Public Network		√
• Unified; Immediate & with announce		√
• Using Conference	√	√
• Using Hold	√	√
• With Callback		√
Unsupervised Conference		N
User programmable feature keys	√	√
Voice Call	√	√
Voice Call Deny	√	√

Norstar Software Features and Benefits

This section describes features and benefits of Norstar software. Check the software feature chart to determine what features are available on the various system software options.

Note: * denotes the described feature as a CMS/CLASS line feature and not a Norstar feature

Accidental Disconnect Protection

If the receiver is accidentally dropped back into the cradle when answering a call, it can be retrieved within one second.

Prevents calls from being lost and thereby provides more professional call handling.

Alternate Restrictions

Alters which calls can be made by changing dialing restrictions according to both time of day and day of week.

Helps to control unauthorized calling.

Answer Groups (also called Answer Button or Answer DN)

A telephone button with an indicator that is used to monitor ringing calls at another set. Calls are answered at the monitoring set by pressing the active button.

Allows a person to monitor or answer all calls at another phone by simply pressing one button.

Auto-Answer

Used with DID, DISA, and E&M trunks, calls are automatically answered by the Norstar system bypassing the attendant; a caller enters the digits for routing to a specific set or line pool access.

Improves customer service by offering more efficient incoming call handling.

Auto Bump On/Off

Feature (On)

Feature (Off)

When a Call Log becomes full, Auto Bumping – “On”, will cause the oldest entry previously viewed to be deleted, and the new call to be logged; when “Off”, the Norstar system will not log new calls.

Automated log management if desired.

Autodial (Internal and External)

Feature * 1 (External)

Feature * 2 (Internal)

Internal or external numbers can be programmed onto memory buttons for one-button dialing access.

Saves time by providing direct access to another person in or outside the office with no need to remember the number.

Automatic Number Identification (ANI)

Delivers the calling line number. (T1 Specific)

Improves customer service when used to pull customer info from a data base before speaking with customer.

Automatic Route Selection (ARS)

Automatically selects the pre-programmed long-distance carrier based on the dialed digits, time of day and day of week.

Lowers costs by insuring that the cheapest available long distance routes are being used.

Automatic Callback (AC) *

Automatically redials the last outgoing number dialed. If it's busy, the CO will use "Ring Again" to monitor the line. When it is free, the caller will hear special ringing, and the number and/or name of the called party will be delivered to the LCD. Multiple busy lines can be monitored for up to 30 minutes. This feature can be programmed as an external autodial for one button convenience.

Improves productivity as the caller, while waiting, can work or continue to use the telephone. With Norstar, the special ring is easy to hear, and callers are quickly identified with call display.

Automatic Daylight Savings Time

The system clock automatically falls back one hour on the last Sunday of October at 2:00 am and automatically advances one hour on the last Sunday of April at 2:00am. This feature can be de-activated where not applicable.

The user no longer has to remember to take care of this. Eliminates the next business day confusion about what time it is and how to program the change.

Automatic Line Selection

When answering incoming ringing calls, Norstar automatically selects the longest ringing line first. Ringing incoming calls are automatically connected by lifting the receiver, pressing Handsfree, or using Call Queuing.

A user does not need to know which line is ringing or which call has been ringing the longest.

Automatic Recall (AR) *

This feature works the same as Automatic Callback (AC). Applies to the last incoming call received.

Automatic Set Relocation

Sets moved to a different location will retain all custom programming.

Saves time and money during employee moves. Employees are able to keep the same extension number.

Auxiliary Ringing

A set's headset jack can send ringing tones via an amplifier to an external loud ringer connected to the set.

Users can hear a ringing set in a noisy environment.

Background Music

Feature 8 6

A user can listen to music (customer supplied) through the set's speaker when the set is idle.

If supplied, it delivers music to a user's set to enhance their work environment.

Bit Error Rate Test (BERT)

A test that checks the transmission quality of the link between the Compact ICS and a telephone set in the system.

Button (Key) Inquiry

Feature 0

Allows a user to check the programming labeled memory buttons.

Ensures current programming matches the button labeling.

Call Duration Timer

Feature 7 7

Temporarily displays the length of the last or current call so a user can record it.

Users can track time spent on calls; useful for account billing.

Call Forward All Calls

Feature 4

Sends all calls to another set.

Improves customer service by ensuring all calls are answered.

Call Forward No Answer

After a preset number of rings, an unanswered call is transferred to another DN.

Ensures a user's phone is answered if the user is unable to answer a call or has forgotten to activate Call Forward.

Call Forward On Busy

If a set is busy, calls are immediately sent to another DN.

When a set is busy, the user is not disturbed and incoming calls are routed promptly.

Call Forward Override

When a set is on Call Forward, the "Forward To" set can still call the "Forwarded" set to relay important messages.

Improves office communications; users can inform others of important messages or ask for forwarding to be cancelled.

Call Forward - Selective

Feature

Pressing the "Do Not Disturb" button when a Central Office line is ringing will transfer the call to the Prime set.

Improves time management for the user, who can view the caller's name and then choose to accept or reject it.

Call Information

Feature

Allows you to display information about incoming calls. For external calls, you can display the caller's name, telephone number and the line name. For internal calls, you can display the name and the internal number.

You can obtain information about ringing, answering, or held calls.

Call Log

Feature

Allows the user to enter Call Log to view stored information including: Caller's name and/or number (if delivered from the CO), Date and Time, Answered Call Indication and Repeat Call Counter.

Increases business opportunities and improves customer service by capturing callers number and/or name even if the call goes unanswered. It also improves productivity by allowing a user to redial the caller's phone number.

Call Log - Optional Password

The user can enable password protection of their call log.

Provides the user with security for their call log.

Calling Number Display

The user can view the number of the incoming caller before answering and during the call. The calling number is also stored in the Call Log. (Requires CMS/CLASS.)

Knowing who is calling improves a user's ability to serve the customer. In conjunction with Call Log, knowing who called increases business opportunities. The caller's number can be passed to an associated PC application to improve customer service, for example, by triggering automatic customer profile retrieval.

Calling Number Display Blocking*

Delivery of calling name and/or number can be prevented when a user places a call. The Norstar user will be presented with "Private Name" and/or "Private Number" when receiving a "blocked" call. For outgoing calls, Norstar supports one button convenience when the user wishes to "block" their number and/or name. (Requires CMS/CLASS)

Privacy and security are maintained for outgoing calls. Identifies callers who have blocked their number and/or name for inbound calls.

Call Park (With Callback)

Feature

An active call can automatically be placed on hold and assigned a code so it can be retrieved from another set.

More convenient and efficient, parked calls can be retrieved from any Norstar set in the system.

Call Pickup Directed

Feature + Intercom #

By dialing the ringing set's intercom number, a ringing call at any other set can be answered.

Simple and convenient to answer calls ringing at another set. The user will know whose set they are answering.

Call Pickup Group

Feature

Users can answer any call ringing at another set within the pickup group.

Lets users within a defined group provide more efficient call coverage for incoming calls ringing at another set within the group.

Call Pickup Trunk Answer From Any Station

Feature

Allows a ringing external call to be answered at any other set.

Improves after-hours communications, as calls can be heard and answered from any station.

Call Queuing

Feature

It answers the next available call, but gives priority to the longest waiting external call.

Improves customer service, because calls are answered promptly and efficiently. (Used with DR3 and higher)

Call Waiting

Feature

The next available call is answered, but gives priority to the longest waiting external call.

Same benefits as Call Queuing. (Used only with Centrex, Centrex+, and R1/Centrex software.)

Callback

Unanswered parked or transferred calls automatically return to the originating set after a preset number of seconds.

Customer service is improved as all calls will be answered.

Camp On (Call Waiting)

An external call waits at a busy set, making alerting tones, until answered or Callback returns it to the originating set.

Allows more calls than a set has lines to wait at a set; alerting tones or illuminated LCD notify the user of a waiting call.

Central Answering Position (CAP)

(Also known as a Key Lamp Module) A CAP module connected to an M7324 set may be assigned enhanced CAP status. This allows lines assigned to this DN to be moved to the CAP module. The Compact ICS supports one enhanced CAP position.

Class of Service (COS)

Class of Service controls the Norstar features and lines available when a call is placed within the system or remotely; it can be associated with a line, a set, or a Class of Service (COS) password.

It offers efficient system control and management.

Class of Service (COS) Password

COS password is a six digit code that lets you switch from your current class of service to one that lets you dial a number prohibited by your current class of service. It is used when DISA access is controlled with passwords. This feature has been enhanced to include an access package which defines the set of lines pools a user may access and provides access to remote paging capabilities. The number of COS passwords has been increased to 100 6-digit passwords (from 19). In addition, a remote caller can change the Class of Service of an incoming call by dialing the DISA DN and

entering a COS password.

Helps to maintain the security of the system by limiting access to authorized users and limiting those users to the features they require.

It minimizes unauthorized system access.

Compression of Feature Codes

Reach-through codes (link, run/stop, programmed release, pause) can be compressed to use less digit space in Autodial or Speed Dial programming modes.

Increases space for longer numbers, features or access codes in Autodial or Speed Dial sequences.

Conference (Three-Person)

Feature 3

A three-person call with two other internal or external parties can be created with this feature.

Conferences are easily set up with LCD prompts; Automatic Hold protects the first call from being accidentally cut off.

Allows you to hold a meeting over the phone. Reduces meeting expenses.

Consultation Hold

A user can put a call on conference on hold to consult with others on another line; held parties can still talk to with each other.

A user can obtain additional information without having to terminate and later re-establish the call, thereby saving time and effort.

Coordinated Dialing Plan

Calls can be programmed to route over a network based on destination codes.

Network calls can be programmed in a manner consistent with local calls.

Custom Business Products Compatibility

Interfacing with an IBM-compatible PC is made possible with a PCI Card or a NorLink unit, allowing access to PC programs specially developed for Norstar.

Expands the system's level of functionality.

Customer Originated Trace *

The user can send the number of the last incoming call to the telephone company. This includes calls where the name and/or number have been blocked. Note: The user does not receive the number of the caller. Security procedures will vary with different telephone companies.

It helps eliminate malicious and nuisance calls.

Delayed Ring Transfer

An incoming call is automatically transferred to a "prime set" after a preset number of rings.

All calls are answered, thus improving customer service.

Dial "0" Station (Dial "X")

This designated receptionist set can be reached from any other set in the system by pressing the intercom key followed by the designated digit.

A receptionist or control person in the office can be reached quickly and easily.

Dial Intercom

To quickly call co-workers internally, a user can press the Intercom button and dial the intercom number.

Provides easy access to co-workers, while keeping outside lines free.

Dialing Filters

Restriction override tables are replaced from previous Modular software versions; a maximum of 100 line, set, or line/set filters provide virtually unlimited flexibility in programming dialing restrictions and exceptions.

Access to lines can be well controlled.

Dialing Modes

Feature ☐ * ☐ 8 ☐ 2

A user can select from the following dialing mode options:

Dialing Mode: Standard

Lets a user choose a line and dial a call using either the receiver or handsfree.

Offers a more efficient dialing process.

Dialing Mode: Automatic

Pressing a dialpad button will automatically select the set's Prime line, thus saving time.

A convenient, handsfree dialing option.

Dialing Mode: Pre-Dial

A person enters, checks and edits a number, before selecting a line.

Dialing mistakes are eliminated.

DID Template

At System Start, template choices include a DID Template which automatically assigns target lines and received numbers as the set DN. When a system is expanded these assignments are preserved. (Installer)

Businesses with a network can easily integrate a new system or expand existing systems by using this template.

Direct Dial – Flexible Digits

A system-wide digit used to call a direct dial set can be any digit from 0-9.

Internal dialing and communications are enhanced.

Direct Dial – Multiple Attendants

Single digit access to an attendant. There may be up to five direct dial sets in the system, but each extension is assigned to a single direct dial set.

Improves customer service.

Direct Inward System Access (DISA)

Allows remote users to dial directly into the Compact ICS system to access Norstar features. Users hear a stuttered dial tone and must enter a Class of Service (COS) password to gain access to the system

Provides added security by controlling system access.

Remote access can be assigned to specific users who need to use the system's network connections or other services.

Users can access the system from remote locations using a Class of Service password. Used as a security feature to control remote access into the Norstar system using Central Office lines; configured with Loop, DID and E&M Trunks.

Controls Norstar system access.

Disconnect Supervision

After an external call disconnects, Norstar drops the line immediately.

Disconnect Supervision prevents the system from identifying a line as on hold or busy, thus denying access, when in fact it is really idle. (Note: the local telephone company must also support Disconnect Supervision.)

Discriminating Ringing at Set

Norstar sets ring differently for internal and external calls so users can easily distinguish between call types.

Provides improved call handling and customer service.

Distinctive Ringing/Call Waiting*

A user hears special ringing or call waiting tones, if the caller is included in a user-specified list of numbers.

Improves customer service by providing an indication of a special customer's call.

Do Not Disturb (DND)

Feature ☐ 8 ☐ 5

Incoming calls will not ring at a set, but the LCD line indicator will continue to flash as calls are forwarded to the prime set.

Allows uninterrupted work when necessary.

Do Not Disturb (On Busy)

Internal and private network callers hear a busy tone instead of ringing while the user is on a call. External callers are transferred to the Prime set for answering. The line indicator for an external incoming call flashes, but the phone does not ring.

While busy on a call, it eliminates the distraction of a second line ringing, while ensuring that external callers are routed to an answering position.

Dial Mode for Lines

Temporarily changes set from pulse to tone mode by pressing 3 to signal external systems and devices.

Improves external communications by letting users activate/access equipment such as voice recording devices.

End-to-End Signaling - Internal

Sends Dual Tone Multifrequency (DTMF) tones over Norstar intercom lines to signal analog devices through an ATA.

Improves internal communications by letting users activate/access equipment such as voice recording devices.

**Enhanced Trunking Connectivity
Private Network - E&M (Tie)
Trunk Connectivity**

E&M Type II trunks can be connected to a Norstar system to create a private network between locations. For each system within the network, the length of directory numbers (DNs), line pools, and line pool access codes are the same.

Ensures cost-effective efficient internal communications.

**Enhanced Trunking Connectivity
Public Network - DID Trunk
Connectivity**

DID (Direct Inward Dialing) trunks let incoming callers bypass the attendant and be directly routed to a target line.

Improves call handling.

**Enhanced Trunking Connectivity
Public Network - Remote Access**

Remote access (with or without DISA) provides off-site remote access to Norstar's private or public network facilities, which avoids public network toll costs.

Helps to improve cost controls.

Executive Busy Override (Priority Calls)

Within a Norstar system, users can force a voice connection to busy set or one on "Do Not Disturb" anywhere in the system.

In the case of a true emergency, the calling party can establish contact.

External Calls on Intercom Keys

Program lines to ring on an intercom key.

User can utilize more buttons for features by using intercom keys for external calls.

External/Network Transfer

Allows the user to transfer calls not only internally, but over the public or a private network.

Improves customer service by allowing the user to transfer the caller to the correct party, even if they are not on the Norstar system.

External Line Access

Outside lines are directly accessed by buttons on individual phones or indirectly by a line pool.

Users can bypass the receptionist to place outside calls, thereby saving time and money.

Feature Access Key

Feature

A person can program any feature code onto a memory button.

Offers fast, single-button access to frequently-used features.

Flexible Call Restrictions and Overrides

Call restrictions and overrides can be applied to individual lines and/or sets, but can be overridden with passwords.

Maintains Call Restrictions cost control, yet provides access to selected numbers within the restricted categories.

Flexible Numbering Plan - Changing DN Length

The length of the Directory Number (internal number) can be from 2 to 7 digits. All DN's in a system must be of the same length.

Provides user with flexibility in assigning internal numbers. It is also helpful when the system is part of a network and a uniform series of internal numbers is required.

Group Listening

Feature

An incoming voice is heard on both handset and speaker, while an outgoing voice occurs only through the handset.

While a group listens to a call through the speaker, the caller hears more clearly through the receiver, as it eliminates background noise.

Group Set Copy

Allows the system programmer to copy data from one set to a range of DN's. Two options are provided: copy from a set to all like sets, or copy from a set to all like sets within a specified range (e.g. copy data from a M7310 to all M7310's within the range). Copying can be done for a particular sub-heading of programming or to duplicate all or a portion of programming for a set.

Handsfree Answerback

Internal voice calls automatically turn on the set microphone so users can reply without touching the set. (Not available with the M7100.)

A user can answer the telephone and continue working; the caller terminates the conversation.

Handsfree – Automatic

A person can program the set microphone and speaker to automatically turn on every time a call is answered or placed. (Not available with the M7100.)

Saves time by providing more convenient handsfree operation.

Hold – Automatic

An active line automatically goes on hold if the user forgets to press the Hold button, before selecting a second line, an intercom or a Transfer button.

Internal and external calls are prevented from accidental cut-off during transfers.

Hold – Exclusive

Feature Hold or

Feature 7 9

Your call can only be retrieved at the set where it was placed on hold.

Your privacy is ensured.

Held Line Reminder

External calls on hold play periodic reminder tones over the set speaker until the call is retrieved.

Customer service is improved, because a user will be less likely to forget the call.

I-Hold/U-Hold Indication

LCD line indicators will flash faster for held calls at the user's own set than for calls on hold at other sets.

It is easy to identify calls held at your own set from those held at others' sets.

Hot Line

A set can be programmed to call a specific internal or external number whenever its handset is lifted or the handsfree button is pressed.

Convenient, direct access to a frequently-called location saves time and effort.

Incoming Line Groups

Incoming Central Office lines are grouped together under a line group and assigned to individual telephones. A maximum of three Incoming Line Groups can be assigned in a system. (Cannot be assigned to an M7100 set or to a single-line set attached to an ATA)

All calls over multiple lines can be answered by any telephone assigned. Frees up memory buttons for programming features or autodial numbers.

Language Choice

Feature * 5 0 1 or
 * 5 0 2 or * 5 0 3

User can select one of three languages for their Norstar set: English, French, or Spanish. (The same system may have multiple languages active simultaneously).

Provides the user with flexibility to accommodate alternative language requirements.

Last Number Redial

User can redial the last externally dialed number.

It is convenient to redial a busy number, and it saves time.

Line Assignment (Set)

A maximum of eight lines can be assigned to any of the sets in the system.

Line Names

Names can be programmed for incoming and outgoing lines.

Informs the user of whose line is ringing to permit more personalized greeting when answering; users can also quickly identify which outgoing line they are using.

Line Pool(s)

Feature 6 4

A user can select a line from a pool of lines using an access code when several external lines are shared by a group of telephones.

When lines are shared among a number of sets, line costs and the number of button appearances are reduced.

Line Pool(s) – Busy Status

When all lines in a Line Pool are busy, the associated LCD set indicator will turn on.

Saves time, because users don't have to keep checking for a free line.

Line Profile

Feature * * 5 4 6 3

Line settings programmed in Configuration and Administration will appear on the M7310 or M7324 set display. (Not available on Compact or 3X8.)

Programming information is easily verified.

Line Redirection

Feature

(Often referred to as **Selective Line Redirection**). Incoming calls on one or more lines can be redirected on a Norstar set to one or more locations outside the system complying with associated dialing filters. Redirected calls cannot be answered from another set. (Not available with M7100).

Users can receive calls at any location.

Line Selection

Idle or ringing lines are manually pressed to override the automatic line selection feature.

Lets a user override the Automatic Line Selection feature.

Link/Flash (Recall)

Feature

If the Norstar system is connected to a PBX or Centrex, a link signal can be used to access special features.

Allows the Norstar system to hear a "second dial tone", before accessing Centrex or PBX features.

Listen On Hold

Users "on hold" may work handsfree while waiting by pressing the hold button, replacing the handset and then reselecting the held line. The call can now be monitored through the speaker.

Users can work handsfree, while waiting for the caller to return.

Log Space (CLID)

Call Log spaces have been increased to a maximum of 250 entries per system.

Logging Options

Feature

The user can determine which type of calls will be logged at a set (i.e., no one answered, unanswered by me, log all calls, and no autologging).

Allows user to customize own set. Also allows the user to capture the calling information on important calls.

LOGIT (Manual Logging)

Feature

If calls are not automatically logged, Logit lets the user manually log an incoming call after it is answered.

Allows the user to capture calling information for only those calls important to them. The automatic one-button process eliminates manual system, eliminates errors.

Long Tones

Feature

Sends long DTMF tones to access devices.

Users can operate devices requiring long continuous tones.

Loss Package

Compensates for Loop Start (analog) trunk quality. Allows selection of appropriate loss/gain and impedance settings for each line. The settings are based on the distance between location of Compact ICS and the service providing Central Office.

Provides improved quality of service for customers with analog lines.

Maintenance Alarms

Alarm codes appear on a designated Alarm Telephone to notify users of a component fault and its location within the system.

Provides instant notification and diagnostic information for problems requiring distributor servicing.

Make Set Busy

Feature 8 1 0

Activated on a Centrex line, this feature makes the associated Centrex line busy.

Minimizes interruptions without losing calls.

Message Leave (List)

Feature 1

Display messages ("Message for you") are sent to other set displays requesting a call back.

By leaving a message, time is saved as the caller does not have to keep calling back, or leave a message with a receptionist.

Message Waiting (List)

Feature 6 5

You can automatically call back the person who sent "Message for you" to your display or cancel the message.

Improves internal communications.

Move Lines

Feature * 8 1

Assigned lines are moved to different LCD memory buttons on the set (except Handsfree, Intercom or Answer buttons) or Enhanced CAP. (Not available with the M7100.)

Users can customize the line appearance on their sets, as well as line answering patterns.

Music/Tone/ Silence On Hold

External callers on hold within the system can listen to music (customer supplied), a periodic tone, or silence as preset by the System Administrator.

Tones or music assures callers they are still on hold and have not been disconnected, thus reducing the number of abandoned calls.

Network Direct Dial

User can dial one digit to reach a specific destination on either a public or a private network.

Saves time and improves productivity.

Night Service

Outside calls that normally ring at the Prime Set can also ring at additional, preselected sets during preset times.

After-hours calls can be heard or answered anywhere in the system, improving internal communications and customer relations.

Numbering Plan – Flexible

The length and sequence of digits needed to access other sets or outside lines can be controlled.

Users can be given intercom numbers to match other PBX and Centrex numbers.

On-Hook Dialing

A user can conveniently choose to dial directly from the dialpad and speak using the handset or Handsfree button.

Convenient for the user.

Paging – Internal

Feature

Internal zones

Feature

Zones 0-6

A user can initiate a page or be paged internally through the set speakers. It is also easy to make announcements through the Norstar set speakers to a select group of users or to all sets.

Users away from their sets, but within the office, can still be notified of calls.

Paging Feature Enhancement

Page time-out is now programmable and a system-wide parameter can now administer the paging tone to be “on” or “off”.

Minimizes the length of time the feature is tied up at one set or left on by accident.

Paging – External

Feature

When Norstar is connected to a user-supplied amplifier and speaker, the user can make external paging announcements.

Paging announcements can easily be sent to rooms or areas without telephone sets.

Paging – External and Internal

Feature **Zones 0-6**

Announcements can be made using both the Norstar set speakers and the office’s loudspeaker system.

It is easy to make system-wide announcements to everyone within your organization.

Paging Set Access

Individual sets can be denied the ability to perform paging.

Improved security of paging system. Sets in open areas can be denied the ability to page i.e., classrooms or motel rooms.

Passive CLID

The CLID feature on Compact ICS is an enhanced version of that found on the Norstar DR5. Now, the same information can be delivered to all Norstar sets with a ringing line appearance, instead of displaying the information about an incoming call to one set only.

Ideal when employees share phones or move around an office.

Password Protection

The system administration password can be changed by the coordinator for added security.

This security feature helps to protect system programming data.

Pre-Selection/ Call Screening

The assigned name of the caller's set or line will appear on the set display.

The user can identify the caller or the line being used.

Prime Line

A line (CO, Intercom, or Line Pool) can be assigned to a set as its primary line of use for automatic outgoing line selection.

It saves time, as a user can begin dialing immediately without selecting a line.

Prime Set

A set can be designated as prime or back up to receive unanswered calls via Delayed Ring Transfers, Held Line Reminders and Do Not Disturb transfers, and overflow call routing.

Offers more efficient call handling.

Priority Call

Feature 6 9

This feature can interrupt a conversation on a busy set or override Do Not Disturb (DND). Users have the option to block a Priority Call, but it cannot be ignored.

In the case of an emergency, the caller can be reached.

Privacy - On Lines

Privacy automatically prevents another telephone, which shares your line, to access or join your call.

Security and confidentiality are assured.

Privacy Control

Feature 8 3

The Privacy ON/OFF switch lets a third person join the call.

A two-way call is easily turned into a conference call.

Programmed Release

Feature * 8 9

Programmed at the end of an external autodial sequence from a PBX or Centrex. It works like RIs, but retains the line for that user.

Time is saved by letting a single button be programmed to end a call once the information has been sent.

Receiver Volume

Volume can be programmed to retain the user's desired setting. All Norstar sets purchased after August 1994 are compatible with the Receiver Volume feature.

Individuals within the system can set their own receiver volume.

Remote System Access

Allows callers on the public network to access the system directly, without going through the attendant. Once in the system, caller can access some of the system's resources (dialing capabilities, line pool access, feature access). The Compact ICS supports remote system access on auto-answer loop start trunks (Disconnect Supervision must be enabled).

- **Auto Answer DN** - when a user dials into the system on an auto-answer loop start trunk that is not configured to answer with DISA, no password is required to access the Norstar system. The Class of Service (COS) that applies to the call is determined by the COS for the trunk on which the user is calling.
- **DISA DN** - when a user dials in on a trunk that has auto-answer with DISA, the system presents a stuttered dial tone to prompt the user to enter their Class of Service password. The Class of Service that applies to the call is determined by this COS password.

Restriction Override Password

Feature 6 8 + Password

A user can bypass any call restrictions applied to any set or line.

Selected users are given convenient and efficient access to a restricted set or line.

Ring Again on Busy Set

Feature 2

It alerts a user when a previously busy set becomes available.

Users save time because they are free to continue working, while waiting.

Ring Again on Busy Line Pool

A user is alerted when a line becomes free in a line pool.

This feature saves time and frustration as users can continue working without monitoring the availability of busy outside lines.

Ring Again on No Answer

Norstar Ring Again notifies a user when a set that was not answered is used.

Avoids unnecessary redialing. It is an efficient way to know when someone has returned to their office.

Ring Line Preference

When several lines are ringing, the longest ringing call will automatically be queued to be answered first.

Provides better customer service as a user can answer calls in the order they were received.

Ring Service

Now alternate ringing can be programmed for day of week as well as time of day.

Provides the flexibility to change which set rings after hours or on weekends.

Routing Service/Destination Codes

A programming section that allows outgoing calls to be directed automatically, based on the numbers a caller dials (also called Automatic Route Selection - ARS). For systems linked in a network, routing can create a transparent or coordinated dialing plan.

To make programming routes easier, digit absorption feature has been added to the Routing feature of the Compact ICS. Digit absorption selects the portion of the destination code that is always absorbed by the system and not used in the dialing sequence.

For the Compact ICS, ARS allows the programming of 500 destination codes and 999 routes.

Installer programming time is greatly reduced in terms of entering the routing codes and more flexibility is provided for routing codes.

Run/Stop

Feature ☐ * ☐ 9

Inserts a break point between external autodialers stored on the same memory button; each press dials the number up to the next break point.

Dialing is faster as the complete sequence can be saved on one button.

Saved Number Redial

Feature or

last number key

It saves and later recalls the external telephone number appearing on the display.

A person can quickly redial the number saving time and effort.

Selective Call Rejection *

When activated, incoming calls are screened against a user-specified list of numbers to be rejected. If rejected, the caller hears a message informing them the called party does not wish to receive their call; the last incoming number can be added to the selective call rejection list even if the number is "Private".

This feature provides an effective deterrent to malicious and nuisance calls especially when combined with Call Trace.

Selective Line Redirection

See Line Redirection.

Set Names

Names can be programmed for internal sets.

Lets users screen calls and verify status on the LCD display; forwarded calls are answered more professionally, because the display shows to whom the call was originally placed.

Set Profile

Feature

Using an M7310 or M7324, the user can view system administration data for each set in the system.

Improves network control, as an administrator can view programming information on specific set configurations and general administration data.

Service Modes

Feature

Three different service modes can be programmed (i.e., lunch, evening, night) with their own ringing arrangements for automatic or manual activation.

Increased control over the system's call handling set-up over three periods of time offers greater system flexibility.

Speed Dial Access

- Personal and System

Feature + code

Allows a person to access both Personal and System Speed Dial Codes.

Prevents dialing mistakes, saves time, and is more convenient.

Speed Dial Line Selection

For speed dialing, the system will use a specific line as determined in administration.

Line selection allows the preprogramming of specific lines for each number.

Speed Dial – Personal Programming

Feature * 4

Allows a user to add or change a Personal Speed Dial number on their set.

Fast error-free dialing is provided for a user's personal telephone directory, with increased flexibility.

Speed Dial System Bypass Restrictions

Speed dial numbers can be programmed to override set and line restrictions.

Allows easy access to selected numbers within restricted categories.

Speed Dial System Names

A name, instead of a number, can be programmed to appear on the set display whenever that speed dial code is accessed.

Keeps confidential the actual number being dialed.

Start DN Option

Allows user to choose the start Directory Number and Directory Number Length, rather than the previous mandatory 221. Typically programmed by the installer under Configuration.

Provides flexibility of uniform Directory Numbers over a network.

Station Set Test

Feature 8 0 5

Provides users with the ability to determine if there is a physical problem with their Norstar set before returning it to the distributor or factory for repair.

- Pressing Feature 805 on the set activates Station Set Test. The LCD prompts the user through the testing procedure
- All tests are available for all sets, with the exception of the Headset Speaker Test, which is not available on the M7100, because it does not have a headset option

If users or INR representatives suspect something is wrong with a button, the speaker, the display, of some part of the Norstar set hardware, a quick test can be done to see which part is broken.

Target Lines

A Target Line is a virtual line, not physical, dedicated to receiving and routing incoming calls on DID or auto-answer trunks to a specific destination; DR5 supports up to 104 target lines which offer attendant bypass and line concentration.

This software enables the optimum use of available resources.

Telephone Administration Lock

Three settings (Full, Partial, None) can be programmed in Administration.

It controls the specific features a user can program/use on their set.

Time and Date Display

The time and date appear on the LCD display of an idle set.

It eliminates a person's need to have a workstation clock.

Time and Date - Show Time

Feature

Temporarily displays for three seconds, the time and date while on a call.

It can prove useful in a busy office environment.

Timed Release

Feature

Signal releases a call from the line, but keeps the line for another call.

If you are making consecutive fax or data calls, you don't have to worry about access to that line.

Transfer Immediate (With Callback)

Feature

A call can be transferred directly to another set; if unanswered, callback occurs after a preset number of rings.

Improves handling of transferred calls.

Transfer Using Conference

The Conference/Transfer button can be used to transfer a call to an internal number.

Ensures a party is not lost during a transfer; better customer service and more professional call handling result.

Transfer Using Hold

The Hold button can be used to transfer a call.

Provides a quick, convenient method for transferring users sharing the same line appearances.

Transfer with Announce

A user announces an internal or external call to the designated party before transferring it by simply staying on the line. To do an immediate transfer, press "OK" softkey or the release key.

The user transferring a call can verify the person is available to receive the transfer.

Unsupervised Conference

A conference call can be established with two outside parties; the user can then exit from the call without disconnecting the remaining two people, provided one of those callers was incoming and the incoming line has Disconnect Supervision.

Two parties can continue a conversation not relevant to the third one without the inconvenience of disconnecting and re-calling each other.

User Preferences

Provides an alternative method for programming user's administration features. The following can now be programmed in one session from any phone in the system for a single set or a group of sets: external autodialers, feature keys, language, display contrast, call log options, internal autodialers, personal speed dialers, ring type, and dialing modes.

Time saving and efficient.

Voice Call

Feature

A user can save time by making a voice announcement or beginning a conversation through the speaker of another telephone.

Saves time.

Voice Call Deny

Feature

This feature prevents a set from receiving Voice Calls.

Interruptions from Voice Calls can be prevented, while the user is still alerted of incoming internal calls.

Wait for Dial Tone

This feature causes a sequence of numbers to pause until dial tone is present on the line before continuing to dial. (If the system is running R1/T1 software it must be equipped with a Services Cartridge. Systems with ICS software do not require additional hardware for this feature.)

Terminals, Accessories, and Peripherals

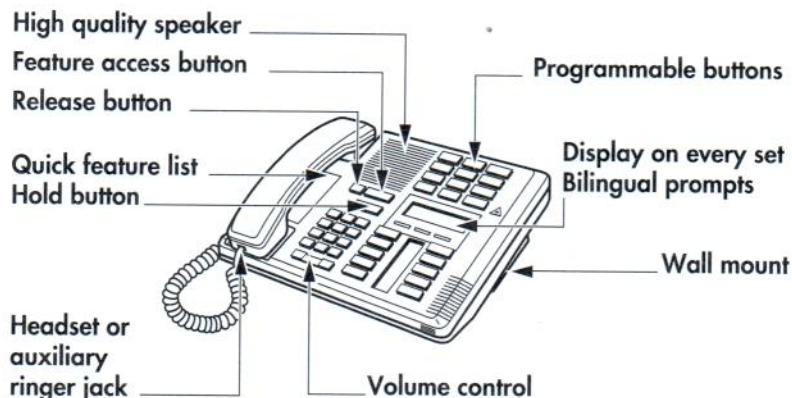
More than a base core unit is required to make a Norstar system functional. Other proprietary products, such as telephone sets, need to be added. Products can be selected from three main product groups: terminals, accessories and peripherals.

Terminals

Model and definition

M7324	M7: Norstar Product	3: 2 LCD Display 1 Handsfree	24: LCD Memory Buttons
M7310	M7: Norstar Product	3: 2 LCD Display 1 Handsfree	10: LCD Memory Buttons
M7208	M7: Norstar Product	2: 1 LCD Display 1 Handsfree	08: LCD Memory Buttons
M7100	M7: Norstar Product	1: 1 LCD Display	00: LCD Memory Buttons

Terminals or sets are the best advertisement for any telephone system because users see and use them every day. The four proprietary Norstar terminals listed above were designed to be excellent advertising for Norstar. While these sets share many similarities, each one has its own specialty in terms of feature capabilities and functionality.



Common Norstar Terminal Features

	M7324	M7310	M7208	M7100
Display				
• LCD Lines	2	2	1	1
• Characters	16	16	16	16
• Display buttons (Soft keys)	√	√		
Handsfree	√	√	√	
Headset Jack	√	√	√	
Loud Ringer Interface	√	√	√	√
Memory Buttons				
• With indicators	24	10	8	0
• Without indicators	0	24 ⁽¹⁾	0	1
Volume Control				
• Ringer	√	√	√	√
• Speaker	√	√	√	√
Wall Mountable	√ ⁽²⁾	√ ⁽²⁾	√	√
Accessories				
• BLF Module		√		
• CAP Module	√			
• SAPS	√	√	√	√

(1) 12 Dual function buttons.

(2) Not when a BLF or a CAP module is attached.

Norstar Terminal software and accessories

	M7324	M7310	M7208	M7100
Software				
Compact ICS, any release	√	√	√	√
Modular ICS, any release	√	√	√	√
3x8 DR5	√	√	√	√
DR1 (3x8, 6x16, 8x24)		√	√	
Compact DR2	√	√	√	
Compact DR5	√	√	√	√
Compact DR5-DS	√	√	√	√
Modular DR2	√	√	√	
Modular DR3	√	√	√	√
Modular DR4	√	√	√	√
Modular DR5	√	√	√	√
Centrex, CTX+	√	√	√	√
Accessories				
BLF		√		
CAP/KLM	√			
SAPS	√	√	√	√

Set Test

End users have the ability to determine if there is a physical problem with the Norstar telephone before it is returned to the distributor or factory for repair if their system is equipped with Compact ICS 1.0 or later, or Modular ICS 2.0 or later. If users or service representatives suspect something is wrong with a button, the speaker, the displays or some other part of the Norstar telephone hardware, a quick test can be done to see which part of the telephone is broken.

- Pressing **Feature** **8 0 5** on the telephone set activates Station Set Test. The LCD display prompts the user through the testing procedure.
- All tests will be available for all sets, with the exception of the Headset Speaker Test, not available on the M7100, because there is no headset option.

M7324 Terminal



Description

The M7324 (Expanded Set) is the best choice for a full-featured terminal or central answering position, because it offers 24 programmable buttons with an LCD for one-button access to any combination of lines, features and autodial numbers. Up to two Central Answering Position (CAP) modules (48 buttons per module) can be attached to a terminal to create powerful call coverage for many lines or to accommodate additional Norstar features (refer to section on CAP module for configurations).

Target Audience

The M7324, with or without CAP modules, is designed for secretaries and receptionists for centralized call answering. It is also useful for managers, professionals, and system administrators requiring high feature usage and access to various lines, such as WATS and private lines.

Applications

For smaller applications, the M7324 by itself, is a central answering position; larger applications require the addition of CAP module(s). Stock brokers could use it with two CAP modules for fast autodial access to preferred customers. Users with wide-ranging needs, such as consultants, might use it for Speed Dialing, Conference Calling and Call Forwarding. The M7324 is also useful for Norstar system administration.

M7310 Terminal



Description

The M7310 (Feature Set) is capable of handling extensive calling and call handling requirements. The 12 dual-function memory buttons, with a Shift button, provide access to a total of 24 additional frequently-used features or autodial numbers. A Busy Lamp Field (BLF) can be attached to the M7310 to monitor the station status for buttons programmed for internal autodials.

Target Audience

The M7310 is ideal for group answering positions, such as secretaries, managers, professionals, and Norstar system administrators with or without a BLF. Businesses requiring extensive autodialing and feature access would also benefit from using this terminal.

Applications

The M7310 is useful for departments, such as purchasing, sales or accounting, where the same suppliers, customers or accounts are frequently called. For secretaries, the M7310 and BLF can provide backup answering services. Norstar system administration is made easy using the M7310.

M7208 Terminal



Description

The M7208 (Square Set) is well suited for lower internal and higher external calling volumes; it supports up to any combination of eight lines and frequently-used features.

Target Audience

The M7208 is a cost-effective set for users needing only a few programmable features and/or autodial numbers.

Applications

The M7208 can be used as a courtesy phone in lobbies, cafeterias, reception areas, or staff lounges. It is also suited for areas where staff numbers are relatively high compared to the number of telephones needed, such as manufacturing plants, retail departments, or repair centers.

M7100 Terminal



Description

The simple design of the M7100 (Basic Set) delivers Norstar functionality and reliability to areas or users with low-set usage requirements.

Target Audience

Companies who want an easy-to-use, functional set in low traffic areas should consider the M7100.

Applications

The M7100 provides phone coverage in areas where basic service is required, such as reception areas, lobbies, and office kitchens.

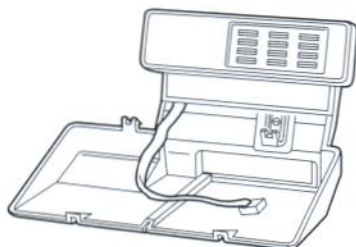
Preview – M7410 Cordless Telephone

The M7410 Cordless Telephone is a new addition to family of Norstar telephones. Planned for release in the first quarter of 1998, the M7410 Cordless Telephone will offer 'workspace' mobility to allow cordless communications in a work area. For further information, see M7410 in Chapter 5, Norstar Mobility.

Accessories

- Busy Lamp Field (BLF)
- Central Answering Position (CAP)/Key Lamp Module (KLM)
- Liberation Headsets
- Station Auxiliary Power Supply (SAPS)

Busy Lamp Field

**Software**

Independent of software

Terminals

M7324

M7310

M7208

M7100

✓

Description

The Busy Lamp Field creates an attendant position to monitor the status (busy or idle) of internal autodial keys programmed onto the dual programmable buttons of the M7310 set to which it is attached. No additional power or wiring is required.

Target Audience

When a BLF is attached to an M7310, it becomes an excellent receptionist or secretary phone for smaller Norstar configurations where line and internal autodial capacity are limited.

Central Answering Position (CAP)/Key Lamp Module (KLM)



Software

Compact ICS, any release	✓
Modular ICS, any release	✓
3x8 DR5	✓
Compact DR2	✓
Compact DR5	✓
Compact DR5-DS	✓
Modular DR2	✓
Modular DR3	✓
Modular DR4	✓
Modular DR5	✓
Centrex, CTX+	✓

Terminals

M7324	✓
M7310	
M7208	
M7100	

4

Description

The CAP is a module connected to an M7324 terminal that provides 48 additional memory buttons which can be used to show a busy or idle status for up to 48 more sets, as well as to program system features or autodial numbers. Up to two CAP modules can be added to any M7324 set. One Station Auxiliary Power Supply (SAPS) is required to power every two CAP modules.

A terminal with one or two CAP modules must be assigned enhanced CAP status in order to provide line appearances or access to Central Office lines.

Up to five enhanced CAP positions can be supported on Modular ICS systems. The Compact ICS supports one enhanced CAP position.

Target Audience

Secretaries and receptionists with M7324 sets responsible for call coverage for many lines will find the CAP very useful. Secretaries, managers and others providing backup answering services will also improve their productivity using a CAP module, as will people requiring high feature usage or line access capabilities, such as telemarketing center managers.

Liberation Headsets



Software

Independent of software

Terminals

M7324	✓
M7310	✓
M7208	✓
M7100	*

* requires an amplifier which plugs into the handset port

Description

Headsets are a valuable addition to anyone who spends more than one hour a day on the phone or for those who need private hands-free communication for activities like conference calls, note-taking, or working on a computer. Headsets have been shown to increase efficiency and productivity in the workplace by as much as 43%.

Norstar Terminals (except M7100*) have a built in headset port. Using Liberation headsets in conjunction with the Direct for Norstar Cord allows you to use your headset without an amplifier, as the cord plugs directly into the Norstar headset port.

In noisy, high use environments or when additional volume is desired, the use of the Liberation Multi-Purpose Amplifier II (MPA II), with integrated headset stand, is recommended. Liberation's wireless headset amplifier could also be used for total mobility of up to 100 feet while on a call. When the MPA II or wireless amplifier are used, they plug into the headset port and the Direct for Norstar Cord is not required. Either of these amplifiers are recommended for use on the Norstar M7100 terminal where they plug into the handset port.

4 different series of Liberation headsets are available:

- Direct for Norstar Series
 - Built especially for use with Norstar sets
 - Does not require an amplifier
 - Packaged with Direct for Norstar Cord
- The Classic Series
 - Most lightweight headsets
 - 3 wearing styles
- The Flex Series
 - Flexible boom arm with fewer moving parts
 - Comes with 3 interchangeable wearing styles
- The Dura Series
 - Heavy duty cord and clothing clip
 - Gooseneck boom arm, reinforced headband, and oversized cushioned receivers
 - Robust, built for high use and noisy environments

For additional Liberation headset, amplifier and accessories information, visit the following website: <http://www.nortel.com/liberation>, or call 1-800-4NORTEL.

For specialized Liberation marketing collateral, call the above number or visit sales.com.

Headset Feature Chart

Headset	Amplifier Required	Wearing Style	Boom Arm	Mic	Enhanced Receiver
Direct for Norstar Monaural NC		Headband	Flexible	NC	Yes
Direct for Norstar Binaural NC		Headband	Flexible	NC	Yes
Direct for Norstar Binaural UNC		Headband	Telescoping	UNC	
Classic Monaural Earhook	√	Earhook	Telescoping	Standard	
Classic Monaural Earloop	√	Earloop	Telescoping	Standard	
Classic Monaural Headband	√	Headband	Telescoping	Standard	
Classic 3-in-1 UNC	√**	Headband Earloop Earhook	Telescoping	UNC	Yes
Classic Binaural UNC	√*	Headband	Telescoping	UNC	
Flex 3-in-1 NC	√**	Headband Earloop Earhook	Flexible	NC	Yes
Flex Binaural NC	√*	Headband	Flexible	NC	Yes
Dura Monaural NC	√*	Headband	Flexible Gooseneck	NC	
Dura Binaural NC	√*	Headband	Flexible Gooseneck	NC	

Notes:

* indicates that this model can be used unamplified with the optional Direct for Norstar Cord.

** indicates that this model can be used unamplified with the optional Direct for Norstar Cord—headband recommended.

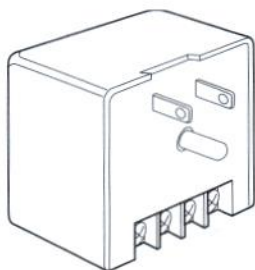
Monaural—one receiver.

Binaural—two receivers.

NC—Noise Canceling microphone.

UNC—Ultra Noise Canceling Microphone.

Station Auxiliary Power Supply (SAPS)

**Software**

Independent of software

4

Description

The Station Auxiliary Power Supply extends the loop length from 1,000 to 2,600 feet between a set or terminal and the Norstar system using a dedicated cable to connect the two locations. One SAPS powers up to three sets at 2,600 feet or two CAP modules (which do not have to be connected to the same M7324 set) at 1,000 feet.

Target Audience

The Station Auxiliary Power Supply is ideal for Norstar installations in large facilities, such as shopping centers, warehouses, airports, and manufacturing floors.

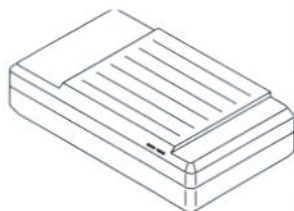
Peripherals

- Analog Terminal Adapters (ATA)
- Call Identification Interface (CII)
- Doorphone
- Personal Computer Interface (PCI)
- Remote Access Device (RAD)
- Station Message Detail Recording (SMDR)
- Voice Mail Interface (VMI)

4

For more information about the new Computer Telephony Adapters (CTA), see Chapter 10, Norstar Computer Telephony Integration.

Analog Terminal Adapters



Software	ATA	EATA	ATA-2
Compact ICS, any release		√	√**
Modular ICS, any release		√	√
3x8 DR5	√	√	√
DR1 (3x8, 6x16, 8x24)	√	√*	√*
Compact DR2	√	√*	√*
Compact DR5	√	√	√
Compact DR5-DS	√	√	√
Modular DR2	√	√*	√*
Modular DR3	√	√	√
Modular DR4	√	√	√
Modular DR5	√	√	√
Centrex, CTX+	√	√	√
* ATA functionality only			
** Compact ICS has a built-in ATA, but is also compatible with ATA-2			

Description

The Norstar Analog Terminal Adapter-2 (ATA-2) is the most recent model of analog terminal adapter introduced for the Norstar system. It has replaced the EATA and is currently the only model for sale. These adapters convert Norstar digital interface to analog for communication with such analog devices as single line telephones, FAX machines, modems and answering machines. Single line sets can interface with Norstar system features such as Call Waiting, Call Forward and many more. The ATA-2 provides a means of connecting a single line set to the Norstar system in either a long loop or off-premise extension configuration.

The Analog Terminal Adapter-2 (ATA-2) supports all the features currently supported by the EATA. As well, it has been enhanced to support faster data transmission speeds, up to and including 28.8 kbps, and has a more compact design for a simplified installation. (Note that the maximum data transmission rate is subject to the quality of the end-to-end channel and cannot be guaranteed.)

The ATA-2 is powered by a grounded AC power supply which is packaged with the ATA-2.

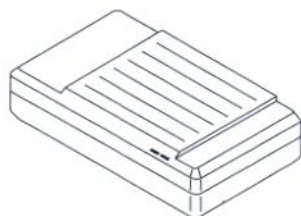
CMS/CLASS feature interworking is not supported by any version of the Analog Terminal Adapter.

Note: For high density analog connectivity with a Modular ICS, customers may make use of the Analog Station Module. For more information about the Analog Station Module, see Chapter 2.

Feature Comparison Chart

	ATA	EATA	ATA-2
Separate Power Supply		√	√
Alternate Line	√	√	√
Call Forward	√	√	√
Call Park		√	√
Call Pickup – Group or Directed		√	√
Call Queuing/Waiting		√	√
Camp		√	√
Centrex/PBX Reach Through		√	√
Conference	√	√	√
Hold – Exclusive		√	√
Hold – Public	√	√	√
LNR	√	√	√
Line Pool Selection		√	√
Link		√	√
Page – General	√	√	√
Page – External		√	√
Page – External/Internal		√	√
Page – Internal		√	√
Priority Call		√	√
Privacy Control		√	√
Reach Through – Timed Release		√	√
Restriction Override		√	√
Ring Again	√	√	√
Saved Number Redial		√	√
Send Message		√	√
System Speed Dial	√	√	√
Tones On	√	√	√
Transfer		√	√
Trunk Answer		√	√
Voice Call		√	√
Voice Mail – Access via DN	√	√	√
Voice Mail – Mailbox access		√	√
Voice Mail – Leave message		√	√
SMDR Account Codes		√	√
CDR Account Codes		√	√
Toll Restriction Improvements		√	√

Call Identification Interface (CII)



Software	CII C6	CII M8
3x8 DR5		
DR1 (3x8, 6x16, 8x24)		
Compact DR2		
Compact DR5	✓	✓
Compact DR5-DS	✓	✓
Modular DR2		
Modular DR3		
Modular DR4		
Modular DR5		✓
Centrex, CTX+		✓
Not compatible with the ICS platform. Functionality is built into the Calling Line ID cartridge.		
Terminals		
Independent of terminals		

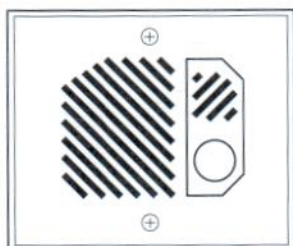
Description

The Call Identification Interface (CII) detects and converts incoming CLASS/CMS call information to a message on the Norstar messaging channel. When used with DR5 software, it provides call display information and associated features to designated telephones in the system including CO Voice Mail Message Waiting Indication.

There are two models of CII for use with the Norstar Compact 6x16 and Modular 8x24 systems: Compact CII (CII-C6) and Modular CII (CII-M8). (On Norstar 3X8 the CII is integrated into the system.)

The CII has EATA plastics and distinctive labeling identifying it as a six-line unit (for Compact) or an eight line unit (for a Modular system). It requires only one dedicated station port on the Norstar system. For the Modular 8x24, the CII-M8 connects to the core system only. For lines connected to a Modular Trunk Module, a CI Trunk Cartridge must be used.

Doorphone



Software

Compact ICS, any release	✓
Modular ICS, any release	✓
3x8 DR5	✓
DR1 (3x8, 6x16, 8x24)	✓
Compact DR2	✓
Compact DR5	✓
Compact DR5-DS	✓
Modular DR2	✓
Modular DR3	✓
Modular DR4	✓
Modular DR5	✓
Centrex, CTX+	✓

Description

The Doorphone is a fully digital, wall mounted, TCM-based terminal that connects directly to a Norstar station port. It requires no analog terminal adapter, external power supply or hardware programming. When equipped with the optional Door Opening Controller (DOC), the Doorphone provides security and convenience for Norstar users wherever an intercom and/or controlled access is required.

Pressing the "Call" button on the Doorphone places an intercom call to one or more Norstar telephones on the system, simultaneously displaying the Doorphone's name in the LCD window. Calls can be answered either with the handset or on handsfree. If a call is not answered, an optional page (distinctive chime) may be directed to telephones in a selected zone. The Doorphone can also be programmed to be answered by voice mail.

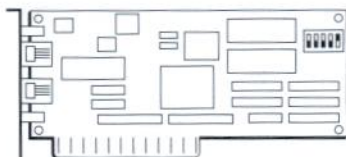
Up to four Doorphones can be supported on a Norstar system with each Doorphone capable of being programmed to ring and/or page a different group of sets, providing flexible call coverage.

Equipped with the optional DOC, the Doorphone allows the occupant to unlock electric doors simply by pressing an OPEN softkey display button or a dial pad digit on their Norstar set. In addition, because the Doorphone with the DOC enables electronic devices to be controlled through contact closure

(third party supplied), dial pad digit commands from a Norstar telephone allows a building occupant to remotely activate alarm systems, surveillance cameras, lights, etc.

Each Doorphone can communicate with up to twelve DOCs, providing control of up to twelve electrical devices through the telephone dial pad.

Personal Computer Interface (PCI-B)



Software

Compact ICS, any release	✓
Modular ICS, any release	✓
3x8 DR5	✓
DR1 (3x8, 6x16, 8x24)	✓
Compact DR2	✓
Compact DR5	✓
Compact DR5-DS	✓
Modular DR2	✓
Modular DR3	✓
Modular DR4	✓
Modular DR5	✓
Centrex, CTX+	✓

Terminals

Independent of terminals

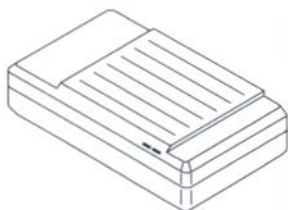
Description

The Personal Computer Interface (PCI-B) provides the link between the Norstar system and Norstar PC applications. The PCI comes in the form of a card that fits into an IBM or compatible PC expansion slot, and software which allows one or more Norstar applications to operate simultaneously. The PCI-B is powered by the host PC. With the PCI Card, Norstar PC applications add many time-saving features and capabilities to the Norstar system.

Norstar PC applications are available separately from the PCI card. PCI takes advantage of Norstar architecture (2B + D digital interface) and shares the station port with sets.

For more information about the new Computer Telephony Adapter (CTA), see Chapter 10, Norstar Computer Telephony Integration.

Fast Remote Access Device (Fast RAD)



Software	Original RAD	Enhanced RAD	Fast RAD
Compact ICS, any release	√* **	√	√
Modular ICS, any release	√**	√	√
3x8 DR5	√	√	√
Compact DR2	√	√	√
Compact DR5	√	√	√
Compact DR5-DS	√	√	√
Modular DR2	√	√	√
Modular DR3	√	√	√
Modular DR4		√	√
Modular DR5	√	√	√
Centrex, CTX+	√	√	√

* An optional software keycode can be purchased to enable the internal RAD (I-RAD) of the Compact ICS.

** RAD is not compatible with MICS 2.0 or CICS 2.0.

Note: See Appendix B for Norstar Manager and Norstar Remote Utilities compatibility details.

Description

The FastRAD offers improvements in data transmission rates and security and replaces the current enhanced RAD. (The enhanced RAD was introduced in March of 1996 and replaced the original RAD.)

The FastRAD is an integral part of local and remote administration and maintenance capabilities of Norstar. It is located on the customer premises and is the physical interface hardware connection.

Remote administration and programming PC applications such as Norstar Remote Utilities, the Companion Diagnostic System (CDS), and Companion Manager, communicate with the ICS using the FastRAD. It uses its built-in modem to provide a communications interface between the target Norstar system and the PC. It can also provide access to the proprietary Norstar D-channel information for the translation and processing of Norstar administration commands, and automatic detection and reporting of ICS alarms.

Customers using the FastRAD with NRU will notice the following enhancements over the previous RAD releases:

- reduced operational costs due to faster transmission speeds
- enhanced security with user defined passwords and access lockout
- improved customer satisfaction due to faster response times
- distributor image as a responsive service provider making use of leading edge technology

The FastRAD is more compact than the existing RAD and is powered through an external power supply. It can be mounted horizontally with the connectors facing up or vertically with the connectors facing to the right.

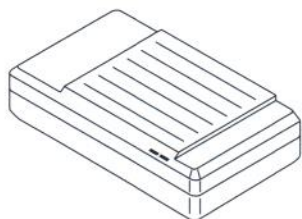
4 The FastRAD is connected to the operations center through the Norstar ICS and the public switched telephone network. Remote communications are provided through a secure data link at speeds up to 14,400 bps. Full duplex communications are provided by an internal modem which supports the V.32/V.32bis protocols. These protocols support modem rates of 14.4k, 9600, and 4800 bps. Since there are no external CO line interfaces built into the FastRAD, the only remote connection can be made through an ICS line.

The FastRAD also provides access from a local terminal. The local terminal connects to the FastRAD through an RS-232 port running at 300, 1200, 2400, 4800, 9600 or 19,200 baud. The design and operation of the FastRAD assumes that only one FastRAD will be connected to the ICS.

Comparison of the RAD and FastRAD:

RAD		FastRAD
External Data Transmission rates	Provided a data transmission rate of maximum of 2400 bps.	Provides a data transmission rate of a minimum of 4800 bps and a maximum of 14,400 bps for calls placed externally over the public network.
Enhanced Local Data Transmission rates	Provided a data transmission rate of a maximum of 9600 bps.	Provides a data transmission rate of a minimum of 300 bps and a maximum of 19,200 bps for calls placed locally through the RS-232 connection.
Alarm Data Transmission rates		The data rate for alarm calls is programmable through the RADMIN interface and can be set to 4800, 9600 or 14,400 bps.
Remote and Direct Access Lockout	Not available.	Provides an Access Lockout for a period of 20 minutes after 3 unsuccessful password attempts. If the alarm reporting feature is enabled, the lockout will be reported to the alarm center
User Password	Static "RADMIN" password.	The user must enter a numeric password between 8 and 10 digits during the initial installation process. At installation, the installer must press Feature **, followed by the user password, in order to enter the programming mode. This same password becomes the one used for future entry into the FastRAD programming.

Station Message Detail Recording (SMDR)



Software	SMDR 2	SMDR 3	SMDR 4	SMDR 5
Compact ICS, any release			√*	√
Modular ICS, any release			√*	√
3X8 DR5		√	√	√
DR1 (3x8, 6x16, 8x24)	√			
Compact DR2	√	√	√	√
Compact DR5		√	√	√
Compact DR5-DS		√	√	√
Modular DR2	√	√	√	√
Modular DR3	√	√	√	√
Modular DR4		√	√	√
Modular DR5		√	√	√
Centrex	√	√	√	√
CTX+		√	√	√
* Release 1 only				

Description

Station Message Detail Recording (SMDR) serves as an interface which lets the user track basic call detail information by: all calls, outgoing calls only, calls with an account code, or by long distance calls. Connected to any station port, it provides basic reports in Norstar or Meridian 1 format. The unit is the interface to import call detail information into Norstar PC Applications software. There are five versions of SMDR.

SMDR5 can replace the SMDR4 on all 3x8, 6x16 and 8x24 systems with DR2–DR5 software. SMDR 2 will continue to be manufactured to support 3x8, 6x16, and 8x24 systems with DR1 software. (SMDR5 will not operate with DR1 software). SMDR4 was discontinued with the introduction of SMDR5.

SMDR version five captures the Calling Line Identification (CLID) and ANI information in Norstar and SL-1 format records available with SMDR version four as well as the following enhancements:

- support of ISDN trunks and terminals in CICS 2.0 and MICS 2.0 releases

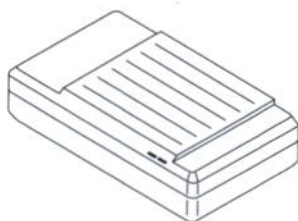
- increase of the maximum number of simultaneous line calls from 80 to 120
- serial port support for baud rates from 1,200 to 19,200
- TCM pass-through for support of a Norstar station set on the same TCM loop
- LED status indicator
- reduction of hardware requirements to conform with industry standard cable connections

Target Audience

Companies interested in gathering telephone activity data to monitor and manage their Norstar system will find SMDR beneficial.

SMDR provides a simple billing process with account codes. System Administrators can review SMDR call data to develop practical call management procedures to minimize call problems.

Voice Mail Interface (VMI)



Software

Compact ICS, any release	✓
Modular ICS, any release	✓
3x8 DR5	✓
DR1 (3x8, 6x16, 8x24)	✓
Compact DR2	✓
Compact DR5	✓
Compact DR5-DS	✓
Modular DR2	✓
Modular DR3	✓
Modular DR4	✓
Modular DR5	✓
Centrex, CTX+	✓

Description

The Voice Mail Interface (VMI) allows the connection of a stand alone third party auto attendant/voice mail system to a Norstar (DR2 or higher). Each VMI supports two AA/VM ports and uses two station ports on the Norstar. The VMI provides three basic functions of third party integration:

- forward to personal greeting
- return to operator
- message notification on/off using the "Message for you" display on the Norstar set

VMI has been tested successfully with five major AA/VM vendors:

- Octel
- Centigram
- VMX
- Active Voice (Repartee)
- AVT (Call Express)

The VMI is generally available in the US only. Contact your AA/VM vendor for compatibility and specific application information.

Norstar Mobility

In the first quarter of 1998 a complement to Nortel Companion, the Norstar M7410 cordless telephone, will be introduced. The Norstar advantage will be strengthened with the delivery of this complete mobility portfolio consisting of superior business cordless and wireless solutions.

The Norstar M7410 Cordless telephone is Norstar's mobility solution for customers who need workspace mobility.

Workspace mobility is characterized by customers who need to make and receive calls in their workspace, which is the area adjacent to their area of work. These customers typically have a coverage requirement of 50,000 square feet or less, and do not have a requirement for coverage expandability. They also do not require the multi-cell coverage, hand-off and roaming that is typical in wireless mobility.

The M7410 provides workspace communication and full integration to Norstar system features.

By comparison, workplace mobility is an application characterized by customers who need to make or receive calls throughout large buildings or areas of operation. These customers typically have a requirement for future expandability, and they need continuous walk and talk capability. Workplace customers generally need coverage over 50,000 square feet.

For these customers, Nortel Companion is Norstar's mobility solution. Companion provides customers with communication throughout the entire workplace, and integration with many Norstar system features.

Introduction to Nortel Companion

In this handbook, the name "Nortel Companion" refers to the Norstar Modular ICS equipped with Modular ICS XC software and Companion Enterprise Mobility hardware components.

The current North American software feature cartridges for Norstar Modular with Companion wireless functionality are:

CDA MICS XC 2.0: Offers expanded capability and Nortel Companion wireless functionality for Canadian market customers.

USA MICS XC 2.0: Offers expanded capability and Nortel Companion wireless functionality for U.S. market customers.

Overview

The proliferation and success of mobile communications devices both in the home (residential cordless) and in business (paging and cellular) is generating an increasing interest in private, in-building mobility solutions for business. Nortel Companion is the first key system designed to offer fully integrated wireless functionality within the workplace.

Although in-building mobility communications is a fairly new business it is one of the fastest growing areas of telecommunications today. The overall telecommunications market in North America continues to have single digit growth, whereas the in-building wireless communications market continues to grow by greater than 70% per year. More and more customers are realizing the value of investing in a mobility solution for their business needs. Nortel's Companion product has been leading the way in North America with number one market position in both U.S. and Canada for multicell Unlicensed Personal Communications (UPCS) solutions.

In a 1994 Norstar survey, 83% of participants saw a growing demand for mobility. Furthermore, 96% asked about mobility in Norstar presentations. There existed a definitive demand for mobility on the job, a need which is being addressed with the introduction of Nortel Companion. This mobility option integrates with existing Norstar Modular ICS telephone systems, allowing continued use of desktop telephones with the added ability to communicate anywhere within the building and surrounding grounds with portable telephones.

Product Alternatives

While both paging and cellular technology would appear to be mobility alternatives, both have drawbacks. Paging provides one-way, incoming communication over a wide area of coverage. The shortcoming is the delayed response: the user must find a telephone to call the person that sent out the page. Cellular technology provides two-way, real time voice communication, but has a high usage-based cost. Cellular voice quality is often inadequate for

the office as calls cannot always be received in the building. Furthermore, with both cellular and paging, you also lose the advantage of integration with an existing system with features such as Calling Line Identification, Visual Message Waiting Indication, Conference, and Transfer.

Benefits of Nortel Companion

- **Cost effective**—Nortel Companion has no air time charges because it is a private mobility solution fully integrated with the Norstar telephone system. Nortel Companion can in effect also replace many devices in use in the workplace such as cellular telephones, mobile radio and pagers that have recurring monthly charges associated with them. The savings in eliminating some of these types of devices help to build the business case for Companion.
- **Efficient**—Users can respond immediately to both inter office issues and customer requests.
- **Productivity**—Users can now take advantage of what would otherwise be “wasted” time (i.e. travel to and from meetings, waiting at fax machines, etc.) by following up on customer requests, responding to voice messages and answering inquiries for information, etc.
- **Customer Service**—With Companion, users will be accessible throughout the day even when they are away from their desk, essentially they will be able to take their desk telephone set with them throughout the day. This translates into faster customer service and response times.
- **Security**—Nortel Companion’s digital technology provides a higher degree of security than traditional analog cellular or cordless.
- **Ease of Expansion**—Just add portable phones and Base Stations as required.
- **Dedicated Radio Spectrum**—Companion operates on a dedicated radio spectrum that has been set aside for Unlicensed Personal communications products. Companion will not receive interference from other radio devices, nor will the Companion interfere with other radio technology.
- **Quality**—Nortel Companion is a high quality wireless communications tool. It has digital wireline quality voice transmission without interference, and it offers all the benefits of complete integration with the Norstar communications system.

Why Choose Nortel Companion

When looking at the option of wireless functionality, Nortel Companion stands out as your best choice for several reasons:

- **Nortel Quality**—Nortel has a strong history of high product quality, support excellence, technological leadership and innovation. Companion is one of the world's most popular in-building wireless communications systems. With almost 10,000 systems installed, Companion has a strong track record of reliability and quality.
- **CT2PLUS compliance in Canada**—Nortel Companion is currently the only wireless key system that complies with the Canadian CT2PLUS standard which operates in the 944-952 MHz radio spectrum that has been dedicated to Personal Communications Services (PCS).
- **1.9 GHz Personal Communication Interface (PCI) compliance in the U.S.**—Nortel Companion is currently the only key system that complies with the U.S. Etiquette rules, and operates in the radio spectrum that has been dedicated to Unlicensed Personal Communications Services (UPCS).
- **Superior Service**—Nortel distribution partners have the local presence and reputation to provide support that cannot be matched. Distributor support includes installation, training and maintenance.
- **Unmatched Combination of Strengths**—Two-way communication, digital security, no air time charges, standards compliance and integration with Norstar features truly make Nortel Companion stand out from competitive technologies.

Target Market

Nortel Companion delivers significant value in a variety of vertical markets:

- **Retail**—Nortel Companion reduces noise and distraction caused by overhead paging systems. Staff members can answer calls quickly and convert calls into sales while providing improved customer service. Companion has been an extremely successful solution in both retail department stores as well as other retail businesses such as car dealerships.

- Health care—Nortel Companion helps health care workers provide faster response and improved patient care. The majority of hospital staff are constantly on the go. A nurse's productivity and span of coverage is strengthened by having continuous access to incoming calls and emergency support. Doctors can be reached immediately when approval for treatment is needed, thereby accelerating the entire patient flow process and reducing the duration of patient stays. Patient flow is also improved by providing porters with portable handsets.
- Manufacturing—Nortel Companion can increase productivity and reduce downtime. With portable handsets equipment operators can easily communicate with supervisory personnel without holding up the production process. A production supervisor can consult with engineers, technical staff or management without having to leave the manufacturing floor. Rapid responses to changing customers needs in production processes are possible.
- Warehousing—Stockroom and warehouse personnel can use Nortel Companion to speed up locating merchandise and provide customer service while staying in touch with the customers and salespeople. They are also accessible to suppliers when coordinating merchandise shipments.
- Hotels—Staff members can use Nortel Companion to be easily located for prompt response to guest service requests. Guests at conferences can rent portables to assist in co-ordination of events, and to maintain contact with key customers.

To determine the individuals within a business who would benefit from Nortel Companion, look for the employees who consistently add high value to the organization. Also, look for those employees who are mobile, either away from their workstations for extended durations or who have a large work area to cover. Individuals who interact with customers directly are ideal candidates for Nortel Companion. They are the key source of revenue for an organization and any means that improves their effectiveness is translated to the bottom line. Finally, review those individuals who are not mobile. Maybe they should be, and Nortel Companion is the means to make them more mobile and hence more productive employees.

Nortel Companion Customer Profile

The need for mobility in the workplace has already been established. The Nortel Companion customer wants the pre-eminent choice in mobility alternatives.

A business that implements Nortel Companion is situating itself on the leading edge of mobile technology in communications. The benefits provided by Nortel Companion are second to none. The improved accessibility and communication network in the workplace results in enhanced quality of work and productivity. This translates into greater revenues. Nortel Companion is for those companies that want the competitive edge in the marketplace and who want to stay one step ahead of the competition.

5

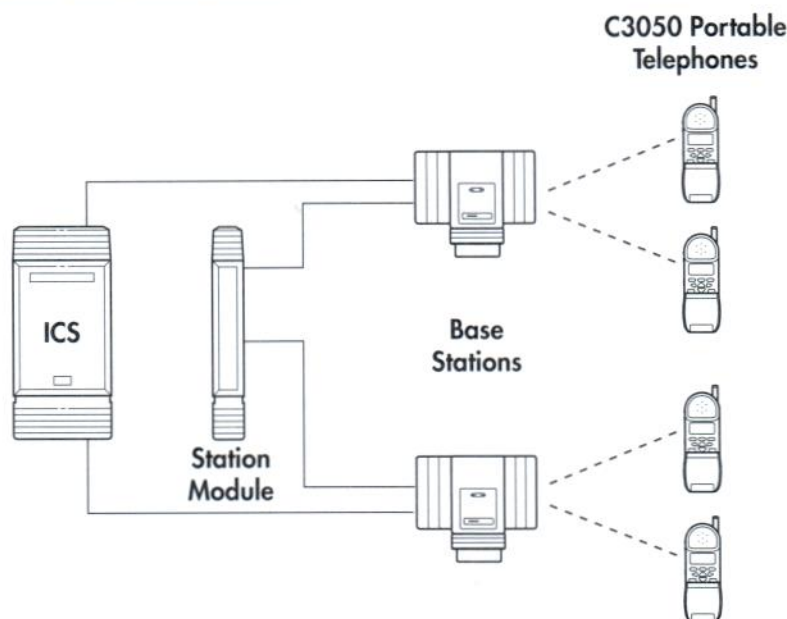
Architecture

With the integration of Companion Mobility capabilities, the Norstar telephone system provides wireless functionality without losing the benefits of the wireline system. The system can be programmed so that users can publish one telephone number and receive all calls on both their desk set and their portable, allowing them to answer whichever is most convenient. Companion Portable Handsets will support Calling Line Identification (CLID), Calling Party Name Display and Visual Message Waiting Indication.

Nortel Companion supports:

- Integrated Nortel Companion wireless functionality.
- Norstar Modular ICS features, including expanded growth.
- Up to 192 Norstar wireline sets.
- Up to 32 Base Stations (on the core ICS or on Station Modules).
- Up to 32 cells.
- Up to 60 battery-powered C3050 portables (USA and Canada).
- In the US, C3050 portables are enabled on the system by the purchase of portable "credits". Each portable requires one portable credit for activation on the system. In Canada, no portable "credits" are required.

Nortel Companion Mobility



Note: Depending on the configuration, Base Stations can connect to either the ICS core unit or to Station Modules.

Compatibility

Nortel Companion is compatible with the following:

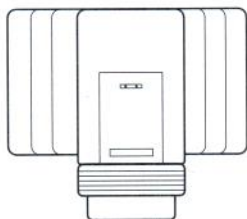
- Norstar wireline sets and Companion C3020 and C3050 wireless portables.
- Norstar Voice Mail RIs 1.3 and up.
- StarTalk FLASH RIs 1.44 and up.
- Enhanced growth to 12 port expansion.
- Norstar Manager 3.1 and up. This enables on line capabilities, so that users can perform administration and maintenance functions locally or remotely.

Hardware

The hardware components which make up Nortel Companion are as follows:

- Base Stations which provide up to 32 cells for total building coverage. They connect to the core ICS or Station Module.
- C3050 Portable Telephones and accessories.
- Remote Power Interconnect (RPI) Units which provide remote power for Base Station support. There are two types; RPI-8 supports up to 8 Base Stations and RPI-16 which supports up to 16 Base Stations.

Companion Base Stations



Size: 20 cm x 32 cm x 5 cm
8 in x 12.8 in x 2 in
Weight: 0.8 kg or 1.75 lb
Color: Dolphin Grey

- Base Stations can be mounted on walls or ceilings. They communicate using digital radio technology to transmit and receive signals between the Base Station, the portable handsets and the Norstar system.
- Base Stations provide the radio coverage for designated cell areas. The system supports a maximum of 32 cells. There are 1 to 4 Base Stations per cell depending on traffic. Base Stations forming a cell must be separated by at least 0.3m (1 ft) and must be within 1.5m (4.5 ft) of each other.
- The actual range of the Base Station is up to 200m (700 ft) in an open environment and between 20m (60 ft) and 70m (230 ft) in-building.
- Base Stations can be powered remotely using the centralized Remote Power Interconnect (RPI) or a 110v plug-in transformer that connects to a local AC power outlet. The RPIs are connected to the Station Module via a BIX Connection Block.
- Each Base Station is connected to Nortel Companion by a standard three or four pair cable. One pair is devoted to voice and signaling traffic, one of two pairs can be used for remote powering. It is recommended that two cables are installed for each Base Station.

- There are two antennae per radio channel. The Base Station samples the radio channel reception on the two antennae and continually switches to the antennae with the best reception.
- There are two LEDs visible on the front of each Base Station. These LEDs indicate the following:
 - A flashing red LED indicates system initialization following power-up.
 - A flashing red LED at any time after initialization indicates a Base Station malfunction or broken communications with Nortel Companion.
 - A continuous red LED indicates that both radios are currently in use.
 - A continuous green LED and no red LED indicates that the Base Station is functioning correctly.
- Base Stations are designed for indoor use, however each Base Station provides a BDN connection for an external antenna. The antenna connects to the BDN using coaxial cable. There are 3 types of external antennas for use with the Companion:
 - indoor directional
 - indoor omni-directional
 - outdoor omni-directional.
- The external antenna should be a maximum of 10 meters (32 feet) from the Base Station. It is used for outdoor coverage on surrounding grounds, underground parking garages, stairwells or any indoor areas which are in general difficult to reach.

C3050 Portable Telephone



Available features

- Calling name & number ID
- User-definable softkeys for simple access to features
- memory keys/function keys
- Headset jack

Enhancements

- vibration alert for discrete situations
- single key access to voice mail

- The portable telephone available on Nortel Companion in the US and in Canada is the Companion C3050.
- C3050 Portable Handsets which have a battery life of 7 hours, 57 hours of continuous standby with 3 AAA alkaline batteries, 3.5 hours talk time and 35 hours continuous standby time with a rechargeable nickel cadmium battery pack, 4.5 hours talk time and 45 hours standby with high-capacity NiMH batteries.
- In the US, for each portable telephone a portable "credit" must be purchased in order to activate it on the system. Handset credits are not required in Canada.
- Nortel Companion portable handsets can either be assigned an independent telephone number or they can be twinned with a Norstar set.
- If the portable is twinned with a Norstar set, calls will ring on both the Norstar set and the portable telephone. The user can answer either one, whichever is more convenient.
- Portables support the specified Norstar set features using the LCD display.
- The portable telephone supports many of the basic features that reside on the Norstar set, such as call forward, call transfer, conferencing and visual message waiting indication. Enhanced features include Calling Line Identification (CLID) and Calling Party Name Display (CPND).
- There are a number of accessories available for the Companion C3050 Portable Telephone. These include three different types of holsters for carrying the C3050 and two headset models for complete handsfree operation.

— Headsets:

Companion headsets plug into the Companion Portable Telephone to provide high quality audio performance and handsfree use of the portable. With a headset, users can leave their portable telephone in their pocket or holster, freeing their hands to use a computer, write, or carry out some other task while they are on a call.

C3001 Headset: The C3001 ear-bud headset has no headband so it can be quickly put on or removed, without interfering with hair, hats or glasses. An attachable hook which fits over the ear is also included.

C3002 Headset: For extra stability and hold, the C3002 has a full headband and is suitable for those who wear headsets for extended periods of time, require a secure fit, work in a noisy environment, or wear a hearing aid.

— Holsters:

The C3050 Clip Style Holster is made from a durable black composite plastic. It has a rotating spring action belt clip that attaches firmly to the user's belt or waist line.

The C3050 Leather Glove is a protective cover much like those available for use with cellular telephones. It has a detachable wrist and shoulder strap and a clear plastic cover that protects the keypad from dirt and moisture.

The C3050 Rugged Protector is designed to provide additional protection if the portable telephone is being used in a rugged environment.

- In addition to the Norstar business features the handset offers the following:

- Fully digital performance to provide clear voice quality
- User-definable softkeys
- 2-line, 16-character display window
- back lit display window and keypad
- 50 name/number scrollable directory (can also be programmed for feature access)
- Calling name and number identification

- Volume control (including muting)
- Distinctive ringing
- Vibrate alert for discreet situations
- Portable telephone registration and de-registration
- Choice of 3 accessory holsters

Approval Process in the USA

PCS Overview

Personal communications services (PCS) are defined as a family of mobile or portable communications services for individual and business use. In the U.S., the Federal Communications Commission (FCC) has allocated different bands or spectrums to different types of transmission. Within the PCS spectrum allocation, 20 MHz was established for unlicensed PCS (UPCS) devices, from 1910 to 1930 MHz. Nortel Companion operates in this newly dedicated 1.9Ghz spectrum for UPCS. Customers can operate these systems free of air time charges, without purchasing any radio spectrum of their own.

UTAM Zones

To ensure that UPCS systems are deployed in a coordinated and controlled environment, the FCC has designated UTAM (Unlicensed PCS Ad Hoc Committee for 2 Ghz Microwave Transition and Management) to handle the role of frequency management.

UTAM is a non-profit industry group responsible for overseeing the interference-free deployment of UPCS as well as the relocation of microwave links to other spectrum/transport systems.

UTAM has established two categories of counties to assist in deployment; Zone 1 and Zone 2.

- Zone 1 includes counties where deployment can be accomplished with no risk of interference to existing microwave links. Systems installed in Zone 1 counties must be reported to UTAM with information on site address, system type, and the number of handsets and Base Stations required.
- Zone 2 defines counties where deployment can be accomplished only after further evaluation of interference potential has been completed on a site-specific basis.

Software Key Codes and Credits—(USA Only)

Nortel Companion systems use Base Station Credits and Portable Credits to control system capacity and activation. Both types may be ordered in any increment.

While there is a charge for the Portable Credits, the Base Station Credits are free of charge.

The UTAM Activation Code activates Base Stations both at the time of initial installation and when a system is upgraded with additional Base Stations.

Likewise, a code is required to allow portable telephones to operate. The Portable Credit Code pre-defines the maximum number of portables that can be registered to the system. One credit is required for each portable. To support the maximum configuration no more than 60 portable credits can be purchased and entered.

Both the Portable Credit Code and the UTAM Activation Code contain three 8-digit parts for a total of 24 digits per code.

Nortel Companion Feature Functionality

Alternate Line Selection

- The link button provides an alternate intercom.

Automatic Line Selection

- Opening the portable or pressing the line button will answer an incoming alerting call.

Call Forward

- There will be no indication on the display that calls are being forwarded.

Call Park and Call Park Retrieve

- An active call can be placed on hold and assigned a retrieval code. The call can be retrieved from any Norstar telephone, including portable telephones, by entering the retrieval code.

Call Information (CLID, CPND)

- The name or DN of internal calls will be displayed, and when the system is properly equipped to receive Calling Line Identification, external calling name or calling number will be delivered to the portable display.

Centrex/PBX Access Features

- Supports: link, timed release and pause.

Conference

- Press link key, dial number, press link again; conference call will be established.

Differentiated Ringing

- Fixed internal and external ring cadences.
- The tone or pitch may change according to the settings located on the portable.

Dial Tone Timeout

- The system will drop the link (full release) after 20 seconds of internal dial tone.

End-to-End Signaling

- Short tones.

External Line Access

- Via Line Pool access code.

Hold

- Although the link key can be used to temporarily hold a call (15 - 20 seconds), the recommended method for hold is to use the mute key.

Intercom

- Portable terminals will be assigned two intercom paths for the purpose of making internal and external calls (not affected by settings in administration programming).

Inter-Digit Dialing Timeout

- 15 seconds for calls or features, does not apply to dialing on external lines after the timeout.
- After the timeout users will hear reorder tone (subject to dial tone timeout).

Multiple Line Access

- Supports multiple incoming CO lines.
- Supports multiple outgoing CO lines via line pools.

Paging via Portables

- Portable telephones can be used to make a page announcement.

Prime Line

- Prime line is always intercom.

Private Line

- Private line is supported.

Release

- Consult the Portable Telephone Feature Card.

Service Confirmation

- By opening the flap or pressing the line button and listening for dial tone, the portable user can determine if there is radio service in the area.

Set Names

- Incoming internal calls will display set names on portables.

Speed Dial

- C3050 system speed dial codes only (portable also has 50 name/number local directory).

Transfer

- Press link key, dial number, press release or close flap; call will be transferred.

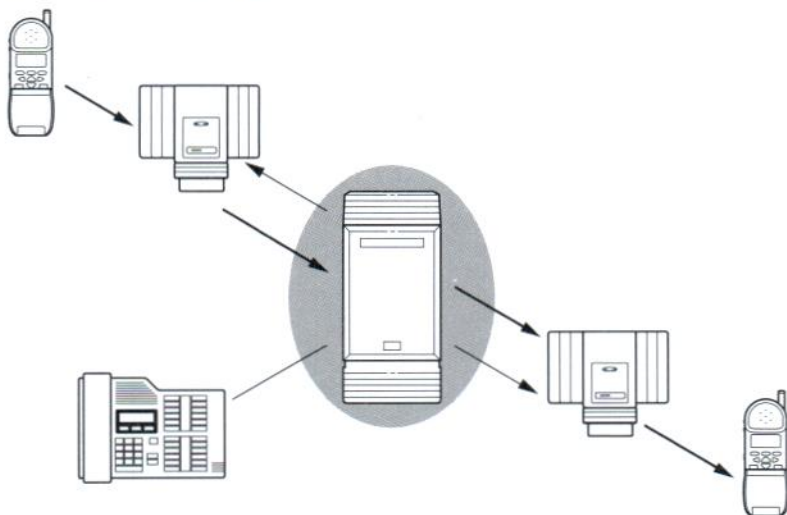
Trunk Answer

- Using the *800 the portable will answer trunk lines from any station.

Wireless Dial-by-Name

- The Dial-by-Name feature, resident on Norstar Voice Mail, can be accessed from the C3020 and C3050 Portable telephones.

Call Handling



5

How a Nortel Companion Call Works

- The portable making a call establishes a radio link with a nearby Base Station.
- The call goes from the Base Station to the Norstar system equipped with Nortel Companion software.
- The Norstar system switches the call just like any other call.
- The Nortel Companion software now locates the portable which is being called.
- The call is delivered to the nearest Base Station and the radio link between the Base Station and the portable telephone receiving the call is made.
- The call path is established and conversation proceeds.

Roaming

Roaming allows the portable telephone user to make calls, receive calls and access business features anywhere within a coverage area. If a portable is in a range of a free radio on a Base Station, Nortel Companion will determine the appropriate Base Station and select a free radio on the Base Station.

If the portable being called cannot be reached, the call can be routed to back-up answering, via the call forward or delayed ring transfer (DRT) capabilities of Norstar.

Absence of dial tone indicates no free radios on the Base Stations in the covered area. To get a free radio, the user can move to a different location and try again. (If the system is provisioned properly absence of dial tone should be an extremely rare occurrence).

Handoff

A portable telephone user should be able to maintain a call while moving within the coverage area. Handoff is when the call is handed from a radio in one cell to a radio in the neighboring cell.

For this to work effectively, Nortel Companion monitors the strength and quality of the signal received by the radio. When the user reaches the outer limits of one cell, Nortel Companion assigns the next, most suitable Base Station to continue the call.

On external calls if the radio link is lost and cannot be re-established within 10 seconds, Nortel Companion will transfer the call to a prime set.

General Call Handling

- The C3050 portable can support a maximum of two concurrent calls:
 - one active/one held
 - one active/one waiting
 - one conference call
- Call waiting—when active on a call, portable user will hear call waiting tones if another call is incoming. User can press “Link” key to toggle between calls. If user does not want to be interrupted with call waiting tones, Call Forward Busy can be programmed in Administration to route the second caller elsewhere. (i.e. voice mail, etc.)
 - Call Forward/Call Forward Busy applies
 - Delay Ring Transfer (DRT) applies

Using Nortel Companion Features

- The “Link” key allows transfer, conference, hold and switching between calls.

For example, to establish a conference call on the portable, press “Link”, dial the second number and press “Link” when answered.

- The “Line” key allows Norstar feature access.

To activate press “Line”, press “*” and enter the Norstar feature code.

To cancel press “Line”, press “*”, press “#” and enter the Norstar feature code.

Twinning

Twinning is the interaction between the wireline and wireless sets. Twinning allows the user to receive all incoming calls on both their portable and wireline sets. The call can be answered on whichever set is most convenient. The incoming call (internal or external) will cause alerting on both sets.

Twinning is set up using answer keys to assign portable handsets to their wireline twin. One set acts as the primary DN with the twinned set assigned by answer key.

If the call is answered at the wireline set, the portable set will display “Call Ended”. The portable will then go into an idle state. If the call is answered by the portable set, the appropriate indicator on the wireline set will be lit and the portable will display the line number or the set name that is connected.

Rules for Twin Alerting

Type of Call	Alert at Idle Twin
Internal or external call attempting to ring wireline set directly	Yes
Call redirected FROM wireline set due to call forward (any type)	Yes
Call redirected TO wireline set due to call forward (any type)	Yes
Park Call back or Transfer Call back to the wireline set	No
Call ringing at answer key on wireline set for another set (i.e. extension 222)	Only if portable also has an answer DN for ext. 222
Call originating from a portable twinned to a wireline set	No (Call originates from the portable - so its not idle)
Second call attempting to ring wireline set when the portable is already on a call	Yes - call waiting tones
Second call attempting to ring wireline set when the portable is already alerting for a call	No - portable is busy at ringing
Call originating to a Private Line on the wireline set	Yes
Call transferred to wireline set from twinned portable	Yes
External call alerting but not ringing at wireline (due to appear only line appearance)	Yes
Internal or external call directed to wireline set by prime set call capture	Yes
Call directed to the wireline set by Service Modes ringing set	Yes
Call directed to the wireline set due to Overflow Call Routing	Yes
Priority or Voice call to wireline set	No

Call Handling—Voice Mail Interaction

When setting up voice mail for a user with a standalone portable telephone, the programming is as follows:

- Assign the mailbox to the DN of the portable.
- As with a wireline set the Forward on Busy and Forward No Answer destinations are voice mail.
- The message indicator will appear on the portable.
- The following voice mail features can be used:
 - *980 - leave a message
 - *981 - open the mailbox
 - *985 - display voice mail DN
 - *987 - interrupt
- Portables cannot use mailbox transfer which is F986.

Generally the user has both a wireline set and a portable. In this twinned scenario the programming is as follows:

- The wireline set and the portable telephone each have their own DN.
- The mailbox must be programmed to one set or the other.

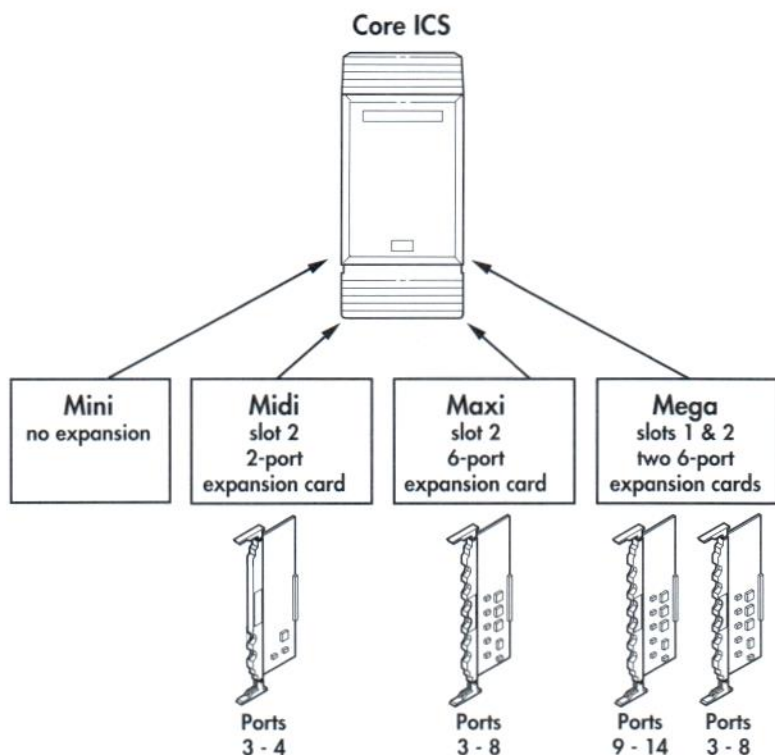
If the user wants visual message waiting indication on the portable telephone the following programming applies:

- Assign the mailbox to the portable's DN.
- The portable's DN must be the published number, i.e. prime number.
- Give the wireline (desk) set an Answer DN for the portable.
- Make the voice mail the Forward No Answer destination for the extension of the portable.
- Calls will ring at both the wireline and portable set.
- After the programmed number of rings, Forward No Answer will send the call to the mailbox.
- The portable will be able to use *987 to interrupt (although this feature will not be available on the wireline set).
- When the mailbox is assigned to the portable the "Message For You" indication will not appear at the wireline set.

If the user wants visual message waiting indication on the wireline set the following programming applies:

- Assign the mailbox to the wireline set's DN.
- The wireline's DN must be the published number, i.e. prime number.
- Give the portable an Answer DN for the wireline set.
- Make the voice mail the Forward No Answer destination for the wireline set.
- Calls will ring at both the wireline and portable set.
- After the programmed number of rings, Forward No Answer will send the call to the mailbox.
- The wireline set will be able to use *987 to interrupt.
- When the mailbox is assigned to the wireline set the Visual Message Indication will not appear at the portable.

Nortel Companion Expansion



The Nortel Companion supports four system expansion sizes: Mini, Midi, Maxi and Mega.

- **Mini**—involves no expansion. The Nortel Companion Base Stations work off the core Modular ICS platform, ports 1 and 2.
- **Midi**—2-port expansion. The 2 port expansion cartridge fits into slot 2. The cartridge provides expansion ports 3 and 4.
(Note: Expansion cartridges begin with port 3. This is because there are two DS-30 loops internally on the core Modular ICS unit; ports 1 and 2. Therefore, when expanding, the first expansion cartridge port is numbered 3 and the twelfth is numbered 14.)
- **Maxi**—6-port expansion. The 6 port expansion cartridge fits into slot 2. The cartridge provides expansion ports 3 through 8.

- Mega—12-port expansion. There are 3 configuration options with 12 port expansion:
 - Two 6 port Fiber Expansion Cartridges.
 - Two Combination Fiber 6-Port Services Cartridges. (Combination Cartridges support 6 port expansion and clocking services for T1 or ISDN-BRI.)
 - One 6 port Fiber Expansion Cartridge and one Combination Fiber 6-Port Services Cartridge.

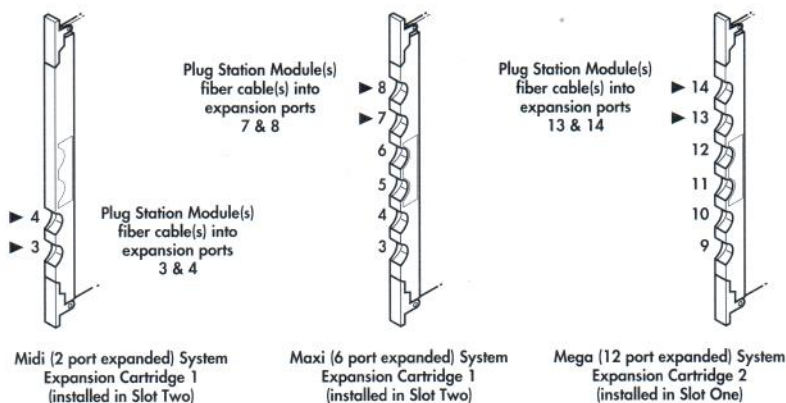
The first expansion card (expansion ports 3 to 8) is designated to slot 2 on the ICS platform.

The second expansion card (expansion ports 9 to 14) is designated to slot 1 on the ICS platform.

5 Expansion Rules

- Modular ICS Trunk Modules are restricted to the first six of the twelve expansion ports.
- Station Modules are restricted to the first ten of the twelve expansion ports.
- Companion Base Stations can be supported on the core ICS in non-expanded systems, or on the highest two expansion ports of an expanded system.
- On a two or six port expanded system, Station Modules which support Companion Base Stations can also support Norstar wireline sets.
- On a fully expanded twelve port system, expansion ports eleven and twelve support wireless Base Stations only.

- On expanded systems, the following chart indicates the port assignment for Base Station configuration:

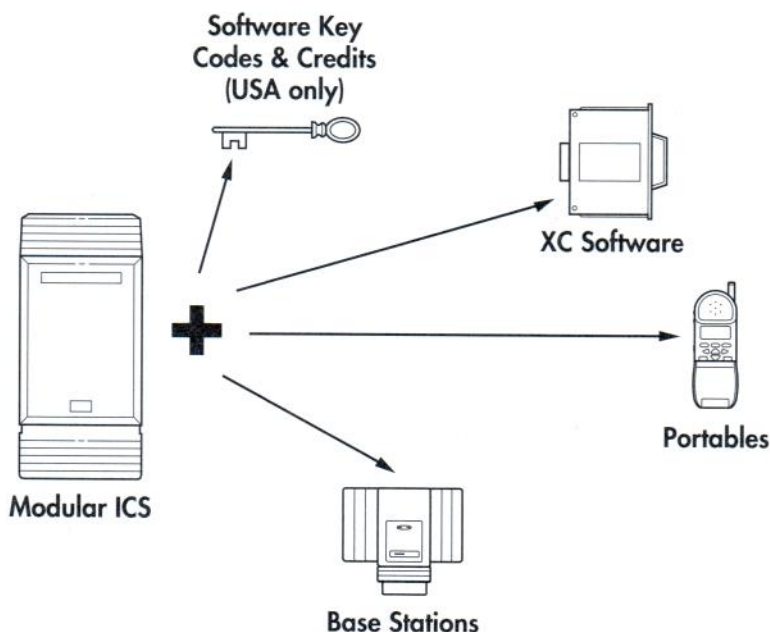


In 2 or 6 port expansion scenarios, Station Modules can support both wireline and wireless. In 12 port expansions, the last 2 Station Modules support wireless only.

When Nortel Companion systems are expanded in size, wireless Base Stations and/or Station Modules must be physically relocated to the correct ports to be operational.

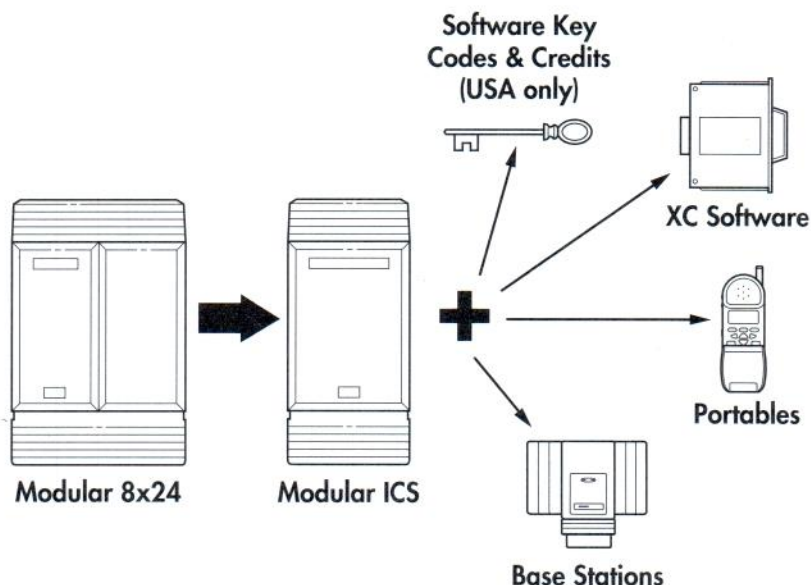
Upgrade Process

Norstar Modular ICS to Nortel Companion



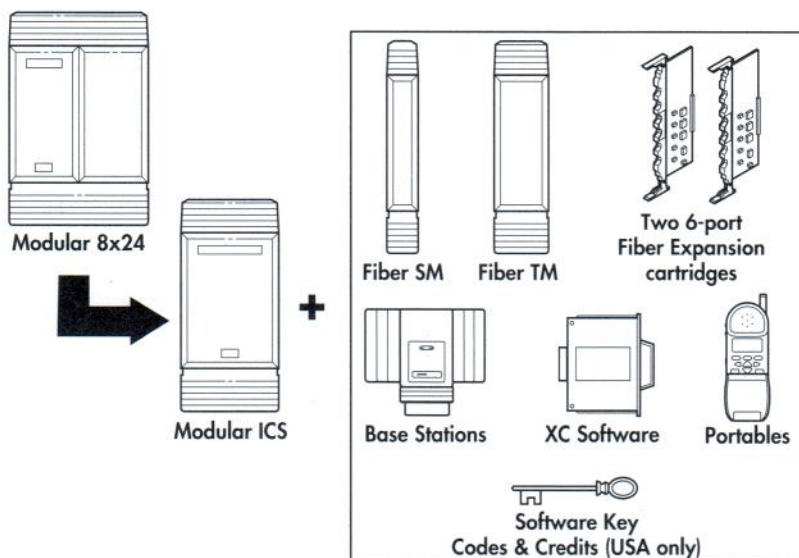
- The Nortel Companion wireless functionality is resident on the Modular ICS XC software. Therefore, the customer only purchases the software, software key codes and credits (USA only), Base Stations and C3050 Portable Telephones required.

Modular 8x24 to Nortel Companion (6 port)



- Nortel Companion software is not compatible with the Modular 8x24.
- To upgrade from a Modular 8x24 to Nortel Companion requires a new Modular ICS core unit.
- Once upgraded to Modular ICS, the customer requires XC software, software key codes and credits (USA only), Base Stations and Portable Telephones.
- Copper Expansion Cartridges and Copper Trunk and Station Modules must be replaced with fiber equipment.

Modular 8x24 to Nortel Companion (12 port)



- To upgrade from a Modular 8x24 to Nortel Companion with 12 port expandability requires a new Modular ICS core unit.
- The enhanced growth to twelve expansion ports is enabled through the use of fiber connectivity. As a result, Copper Expansion Cartridges and Copper Trunk and Station Modules must be replaced with fiber equipment.
- Once upgraded to Modular ICS, the customer requires XC software, software key codes and credits (USA only), two 6 port Expansion Cartridges (either two 6 port Fiber Expansion Cartridges or two Combination Fiber 6-Port Services Cartridges, or one of each depending on digital connectivity requirements), Fiber Station Modules, Fiber Trunk Modules, Base Stations and Portable Telephones.
- The investment in Norstar sets is protected. This generally constitutes 60% to 70% of investment in Norstar.

Administration and Maintenance

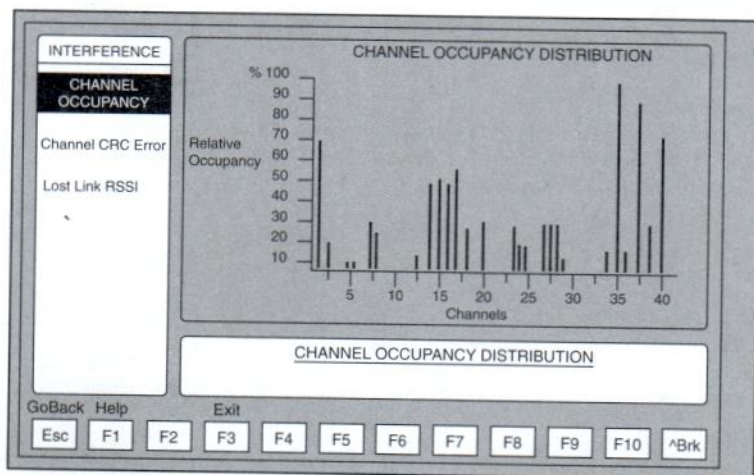
Administration

- Once integrated with Norstar, Companion administration can be done from any M7310 or M7324 set as can Norstar administration. The administration set is fully functional. These sets can make and receive calls in addition to performing administrative functions.
- The Nortel Companion Maintenance and Installation Guide provides details on Base Station maintenance and on which maintenance operations can be performed by the system administrator.
- Nortel Companion administration and programming can also be accomplished using Norstar Manager and a Remote Access Device (RAD). See Appendix B for details of releases.

Receiver Signal Strength Indicator (RSSI) Monitoring

- Any Companion Portable Telephone can be used as a test tool by using the portable's RSSI measuring capability. This capability is detailed in the C3050 Registration Instructions document.
- Receiver Signal Strength Indicator (RSSI) Monitoring is used to aid in Base Station positioning and troubleshooting. Monitoring can either be directed or undirected.
- Directed RSSI Monitoring enables system administrator to check the coverage provided by a specific Base Station. Each portable telephone displays RSSI measurements found on the Base Station/portable telephone link.
- Undirected RSSI Monitoring is used to detect gaps in radio transmission coverage.

Companion Diagnostic Software



- Companion Diagnostic Software (CDS) uses a Remote Access Device (RAD) and a 386 Personal Computer to run maintenance and diagnostic procedures remotely or locally.
- CDS can be used for many maintenance and diagnostic functions from checking system performance, to problem diagnosis, to measuring Base Station occupancy.
- The RAD is connected to a Station port on the Nortel Companion system.

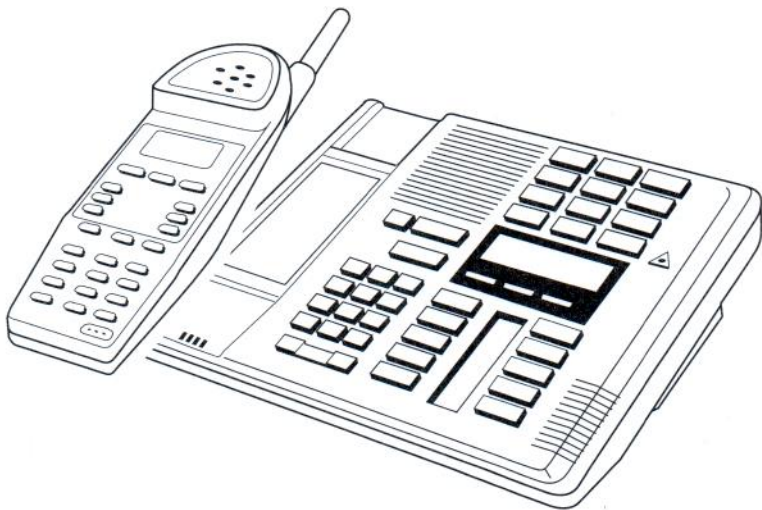
Companion Deployment Tool

- Companion Deployment Tool (CDT) comprises a CDT Base Station, CDT Stand and CDT Battery Assembly.
- It is used in conjunction with a portable telephone to test the radio propagation characteristics of the site before installation of a Base Station. This activity is called the Site Deployment process.
- The Site Deployment process ensures proper placement of each Base Station for optimal performance and coverage.

Preview—M7410 Cordless Telephone

The new M7410 Cordless Telephone is planned to be introduced in the first quarter of 1998 to complement Companion Mobility and enhance Norstar's portfolio of terminal products.

The M7410 Cordless Telephone strengthens the Norstar advantage with the delivery of a complete mobility portfolio consisting of superior business cordless and wireless solutions. Many businesses require 'workspace' mobility which allows users to maintain cordless communications throughout an area adjacent to their area of work, but not an extended range where handoff and roaming are necessary. Digital cordless solutions have emerged to address customer needs within the small to medium sized business mobility market.



Description

The M7410 Cordless Telephone is a single cell, narrow band, digital 900 MHz cordless telephone with the additional benefits of a fully functional M7310-type base, providing access to all existing features of the Norstar portfolio of sets. The M7410 Cordless Telephone provides full integration to the Norstar system and all Norstar applications (such as ACD and Voice Mail) and Norstar Remote Utilities, and is fully backward compatible with all software releases of the Norstar systems. The M7410 Cordless Telephone installation requirements are the same as for any other Norstar telephone.

The M7410 Cordless Telephone portable handset has a battery life of 4 hours talk time and 50 hours of continuous standby time with a rechargeable 700 mAh NiCd battery pack. A rechargeable 1000 mAh NiCd battery pack can extend this to 7 hours talk time and 72 hours of continuous standby time.

Target Market

The M7410 Cordless Telephone is designed to address cordless requirements in small to medium site business markets who have 1 to 15 users and require average coverage for up to 50,000 square feet and do not anticipate a requirement for expanding coverage.

Applications

Retail clerks, checkout/parts counter staff, stockroom/order desk personnel, security and sales staff and mobile managers as well as technicians, doctors and nurses will benefit from the M7410 Cordless Telephone. This mobility solution delivers significant value for a variety of markets:

- **Retail** – Customer service and cost reduction have become two key methods by which retailers are attempting to differentiate themselves in this increasingly competitive market segment. The M7410 Cordless Telephone can help staff answer calls quickly and convert calls into sales while providing improved customer service. Immediate, real-time communications can also reduce costs by providing access to security personnel.
- **Small-site Business** – Managers must be mobile but still maintain accessibility to customers and staff. The M7410 Cordless Telephone can improve customer service and productivity through better access to people and information and hard dollar savings through improved use of network services.
- **Manufacturing/Warehousing** – Immediate access to critical decision makers and information becomes essential to meet the growing expectations of customers and remain competitive. Personnel can use the M7410 Cordless Telephone to provide 'on-the-spot' problem solving, speed up location of merchandise and improve productivity by better utilization of time.
- **Clinics** – The M7410 Cordless Telephone helps medical personnel provide faster response and improved patient care. Productivity and communication is improved with the ability to share information and have immediate access to incoming calls and emergency support.

Planned Features

In addition to standard Norstar telephone features, the M7410 plans to offer:

- On-hook features:
 - Page base
 - Ring selection (DND, Vibrator on/off, Handset ring type, Ringer on/off and Short Ring on/off)
 - Backlight on/off
 - Base lockout
 - Handset volume
 - Audio level
- Off-hook features:
 - Move call to base
 - Base lockout
 - Microphone on/off
 - Speaker on/off
 - Backlight on/off
- The M7410 base is a fully featured M7310-type base with the following additional features:
 - Base antenna
 - Dedicated page button
 - Handset cradle smart charging contacts with light indicator
 - Spare battery port with charging contacts and light indicator
- The M7410 has a 2 line, 16 character display and 3 context sensitive soft keys (a third level of display shows icons for battery level, signal strength, speaker on/off and vibrator on/off); 6 programmable buttons for lines and/or features, Release button, Feature button and Hold button.

The M7410 handset is also equipped with a headset jack, Mobility button (to answer incoming calls and/or access Options list), wrist strap, belt clip and antenna with light collar.

Norstar Applications Module

Overview

The Norstar Applications Module is an industrial grade computer server designed to run and integrate telephony software applications with the Norstar system.

The Norstar Applications Module is the operating platform for Norstar's integrated software applications such as Norstar Voice Mail, Dial By Name, Norstar Interactive Voice Response and Norstar MINUET, PRELUDE and CINPHONY ACD. (See the Messaging and Call Centers chapters for further details on these applications).

The number of applications that can be loaded onto the Norstar Applications Module will be determined by the type of applications and their processing requirements. If required, multiple Norstar application products can be supported on a single Norstar system.

The Norstar Applications Module is targeted for customers who want to maximize the benefits to their business from integrated software applications. It has been designed specifically to assist customers in transitioning their business communications to higher levels of productivity.

Customer growth and investment protection is achieved through Norstar Applications Module options such as a CPU upgrade to boost performance, memory expansion to increase processing power, and hard drive expansion to increase storage capacity.

As a new generation computer telephony product, the Norstar Applications Module is the evolution from stand-alone to server-based integrated applications.

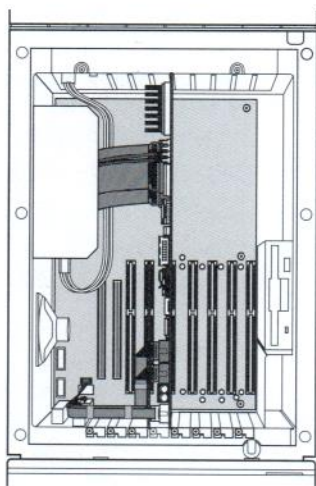
Norstar Applications Modules I and II

The Norstar Applications Module I was the first applications platform developed, using Digital Voice Cards (DVCs), to integrate Norstar Voice Mail with Norstar key systems.

An initial release of the Norstar Applications Module II was available from April to September of 1997. This release also used Digital Voice Cards to support the Norstar Voice Mail application.

As of the end of September 1997, the Norstar Applications Module II is available with Media Services Based Interface Cards (MS-BIC) and Media Services Processor Expansion Cards (MS-PEC) to run multiple applications simultaneously.

Norstar Applications Module II (MS-BIC based)



Height: 63 cm (24.80 in.)

Width: 30 cm (11.81 in.)

Depth: 17 cm (6.69 in.)

Weight: 14 kg (30.8 lb.)

The Norstar Applications Module II is an industrial grade computer server functioning as the platform for Norstar Computer Telephony Integration applications.

The Norstar Applications Module II comes with a Media Services Base Interface Card that provides voice processing capability to connect the module with a Norstar system through a DS30 fiber optic line.

The Media Services card allows for up to 8 voice channels, which can be activated by software keys when purchased with applications.

Using a Single Board Computer equipped with the Intel Pentium P100 MHz processor and 16 MB (expandable to 32 MB) Random Access Memory, the Norstar Applications Module II provides a powerful platform to run multiple CTI applications simultaneously:

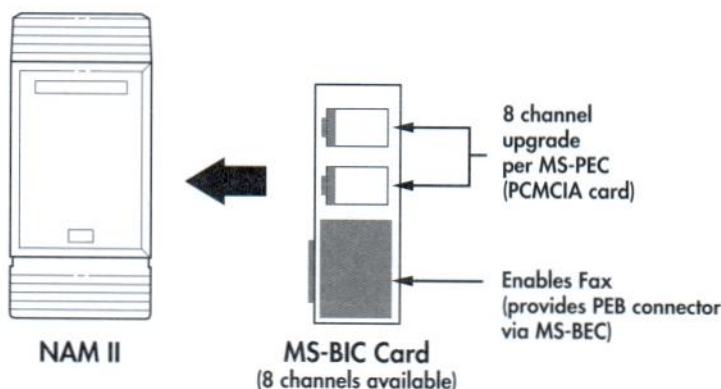
- Norstar Voice Mail
- Norstar Fax mail
- Norstar Desktop Messaging
- AMIS
- Norstar Digital Networking
- Norstar Automated Call Distribution
- Norstar Interactive Voice Response

With a large capacity 1.2 GB Hard Disk Drive, the Norstar Applications Module II supports a voice message storage capacity of at least 100 hours, and has additional space to load a second or third CTI application. A second 1.2 GB drive can be added if required.

A passive backplane provides 7 expansion card slots including allowance for a network adapter card.

The Norstar Applications Module II comes with OS/2 WARP Connect (version 3.0 or higher) pre-loaded and tested, including support for TCP/IP and OS/2 Requester for Netware. The OS/2 WARP is a multi-tasking operation system which supports running multiple applications on the Norstar ACCESS telephony software. The Norstar Applications Module II is also available for customers using Norstar TSAPI for industry standard Windows platform connection to Norstar systems.

Media Services Base Interface Card (MS-BIC)



The Media Services Base Interface Card provides voice channels for applications such as Norstar Voice Mail, MINUET ACD and Norstar Interactive Voice Response on the Norstar Applications Module II.

As an alternative to the Digital Voice Card previously used in the Norstar Applications Module II, the MS-BIC provides up to 8 voice channels initially and can expand up to a total of 32 voice channels by adding Media Services Processor Expansion Cards. The voice channels can be configured to either be shared between applications or dedicated to a specific application. The total voice channels activated is dependent upon the application being installed and may require software keys.

The MS-BIC cannot be used to replace Digital Voice Cards in existing systems. (Digital Voice Cards will continue to be used for expansion on those systems.) A DVC-based system cannot be converted to a MS-BIC system.

The MS-BIC connects to the Modular ICS using DS30 fiber optic cable which plugs into an available expansion port (except ports 11 and 12) on the ICS. The MS-BIC and the DS30 fiber optic cable are included in Norstar Voice Mail and Interactive Voice Response systems on the Norstar Applications Module II. The card can be located up to 6.5 feet/2 meters from the Modular ICS. This distance can be increased to 1500 feet/450 meters by using a DS30/Station Port Adapter.

Media Services Processor Expansion Card (MS-PEC)

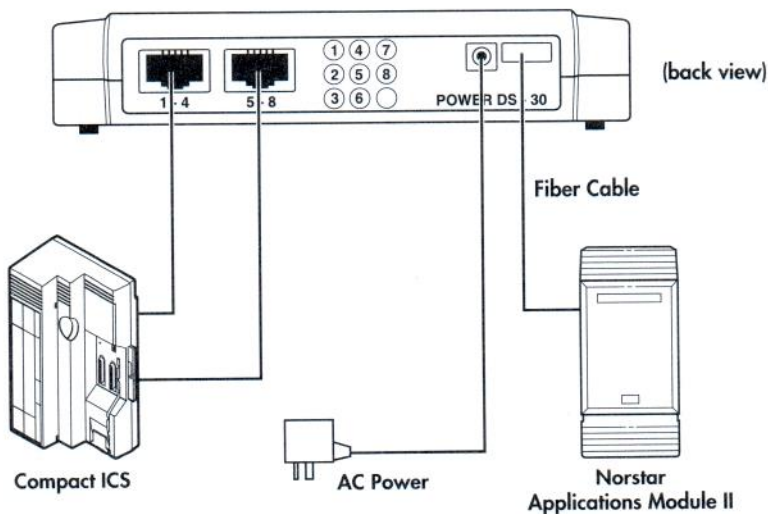
The Media Services Processor Expansion Card is a PCMCIA style daughter card that can be inserted into one of four available PCMCIA docks on the Media Services Base Interface Card. The MS-PEC increases the number of voice channels that can be processed by the MS-BIC in increments of 8 channels, up to a maximum of 32. The MS-PEC can also increase the processing power of the MS-BIC.

Voice channel expansion can be accomplished as follows: MS-BIC provides up to 8 voice channels; add 1 MS-PEC to grow up to 16 voice channels; add a second MS-PEC to grow up to 24 voice channels; add a third MS-PEC to grow up to 32 voice channels.

Depending upon the application being installed, the activation of the voice channels may require software keys.

Norstar Voice Mail can use a maximum of 16 channels. Each application has a different maximum number of channels available. The total number of voice channels used by the applications cannot exceed 32.

DS30/Station Port Adapter



The DS30/Station Port Adapter converts up to 8 Norstar station ports to a single DS30 fiber optic line. Up to 8 Norstar station lines, or 16 voice channels, are supported with two RJ-45 connectors. This provides a means to

connect a Norstar Applications Module II equipped with a MS-BIC to a Compact ICS, Modular 8x24, Compact 6x16 or Norstar 3x8 system.

The adapter can be located up to 1500 feet/450 meters away from the Norstar key system, allowing the Norstar Applications Module II to be located remotely within an office. The DS30/Station Port Adapter comes with an AC power adapter and can be wall or desk mounted.

Media Services Bus Expansion Card (MS-BEC)

The Media Services Bus Expansion Card is a mezzanine-style daughter card that attaches to the MS-BIC and allows the fax option to be implemented.

A PCM Expansion Bus on the MS-BEC card allows the Digital Fax Card to be connected to the Norstar Applications Module via a PEB cable. The MS-BEC is included with the fax option.

Digital Fax Card

The Digital Fax Card (DFC) can be installed in an ISA expansion slot on the Norstar Applications Module to provide Fax Answering, Fax Overflow, Fax Mail, Fax-On-Demand and Fax Broadcast. The complete package includes a DFC, an MS-BEC, a PEB Data Cable to connect the fax board to the MS-BEC, a Fax Messaging software installation diskette, and supporting documentation.

The Fax option provides two or four channels of Fax. The DFC can be dedicated or shared between multiple IVR applications and NVM 3.0.

Secondary Hard Drive

A secondary hard drive can be added to increase message storage capacity by an additional 125 hours.

RAM upgrade

All Media Services based Norstar Application Module II's come with 16 MB of EDO RAM. Additional memory may be required to support optional applications or features. If a system needs more than 16 MB of RAM, two 8 MB SIMMS can be added for a total of 32 MB of memory.

Network Interface Cards

In order for the Norstar Applications Module II to communicate on the LAN and provide access to Norstar Voice Mail, or for Norstar Interactive Voice Response to interact with a database, a Network Interface Card (NIC), must be installed in the NAM II.

The Norstar distributor or the customer LAN administrator installs and configures the NIC. Installation of the NIC requires the following:

- Keyboard
- Monitor
- SVGA card

NIC cards are not sold by Nortel. The customer may purchase one of the following NIC cards that have been tested and verified to be compatible with the NAM II:

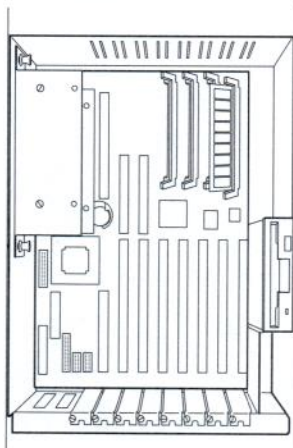
BUS	Supplier	NIC Card	Model No.
ISA	3COM	Ether Link III	3C509B
	3COM	Fast Ether Link	3C515
	Hewlett-Packard	DeskDirect 10/10DVG	J2573A
	Olicom	Pocket Token-Ring Adapter	OC-3210
PCI	3COM	Fast Ether Link XL 10/10D	3C 595-T4
	D-LINK	Ethernet	DE-530CT
	GVC	10Base T PNP	2006BT
	Hewlett-Packard	DeskDirect 10/10DVG	J2585A
	IBM	Pro 100/10 EtherJet	86H2432
	Intel	Ether/Express Pro 100	PCLA8465B
	Max Tech	10/100 Combo	NX-110PCI

For more information on NIC cards for the NAM II, consult the TIPS-108 NA 09/97 "NIC for NAM" document on the Nortel ITAS web page at: www.nortel.com/norstar_itas.

Norstar Applications Module I and II (DVC based)

The Norstar Applications Module consists of a wall mounted unit which looks like a Norstar Modular ICS. When installed and mounted next to the ICS, the ICS and Norstar Applications Module form a single integrated system.

Norstar Applications Module I



Height: 63 cm (24.80 in.)
 Width: 30 cm (11.81 in.)
 Depth: 17 cm (6.69 in.)
 Weight with internal HD and 2 DVC's: 13.6 kg (30 lb.)
 with all slots and bays filled: 15.9 kg (35 lb.)

Digital Voice Card (DVC)

The Digital Voice Card installs in an expansion slot within the Norstar Applications Module and supports up to four voice channels. The NAM Is and NAM IIs purchased prior to September 29, 1997 use the DVC.

The four voice channels are activated in two channel increments, and can be configured as dedicated or shared between applications. Two channels of a DVC requires only one station port on the Norstar system. Connection is made using standard teledapt cabling with RJ-11 adapters. If additional channels are required another DVC can be installed to provide four more channels.

When installed on a DVC-based NAM running Norstar Voice Mail Releases 1.X and 2.X, the first two voice channels are automatically enabled for Norstar Voice Mail.

Customers using NAM II with Voice Mail 2.X and DVCs will need to upgrade to Voice Mail 3.0 before they can add Interactive Voice Response; they can then run IVR with DVCs.

It is important to note that the Media Services Based Interface Cards (MS-BICs) cannot be used to replace Digital Voice Cards in existing systems. DVC's and MS-BICs cannot be used on the same system.

Channel upgrades on systems using Digital Voice Cards

Customers performing channel upgrades on their Norstar Voice Mail systems equipped with DVCs must ensure that sufficient hardware is available to complete the upgrade. It may be necessary to purchase hardware separately. The following table shows voice channel hardware requirements for systems using DVCs:

Voice channels	Minimum DVCs
2 or 4	1
6 or 8	2
10 or 12	3
14 or 16	4

In addition consider the following when assessing if more DVCs are required:

- If the customer is running Norstar Voice Mail Release 3.0 only on a system, then the system requires a minimum number of DVCs to be installed. If additional DVCs are required, they must be purchased separately.
- If the customer is running more than one application on the same Norstar Applications Module, the hardware required to perform the Norstar Voice Mail voice channel upgrade may be installed already. In this case, the decision to purchase additional hardware must also be based on customer needs for either dedicated or shared channels between the two or more applications.

Digital Fax Card for DVC based NAM

The Digital Fax Card (DFC) can be installed in an expansion slot on the Norstar Applications Module to provide Fax Answering, Fax Overflow, Fax Mail, Fax-On-Demand and Fax Broadcast. The complete package includes a DFC, a PEB Data Cable to connect the fax board to the DVC, a Fax Messaging software installation diskette, and supporting documentation.

The Fax option provides two or four channels of Fax. The DFC can be dedicated or shared between multiple IVR applications and NVM 3.0. The DFC is required by both NAM I and NAM II.

Fax Messaging is compatible with Norstar systems DR5 or Modular ICS, and requires Norstar Voice Mail Release 2.0 or higher.

Secondary Hard Drive

A secondary hard drive can be added to increase message storage capacity. A secondary hard drive formatted for the Norstar Applications Module I adds 37 hours of message storage. The secondary hard drive for the Norstar Applications Module II adds over 70 hours of message storage capacity.

RAM Upgrade for DVC based NAM

All Norstar Applications Modules I and II (DVC-based) come with 8 MB of RAM. Additional memory may be required to support software upgrades to Norstar Voice Mail 3.0, optional applications or features and for running multiple applications after upgrading to Norstar Voice Mail 3.0.

A system can be expanded to 16 MB of RAM with the addition of one 8 MB SIMM. If a system needs more than 16 MB of RAM, two 8 MB SIMMS can be added for a total of 32 MB of memory.

Memory Calculation for Norstar Applications Module

When completing a quote for a customer, the following table can be used to ensure that sufficient memory is specified to support multiple applications on the Norstar Applications Module.

Instructions for use:

1. In the far right column, pencil in the value from the adjacent column for those items you wish to select.
2. Total up the numbers in the "add" column and enter answer in the "Total score" box.
3. Compare this value with the instructions in the System Configuration box at the bottom of the table.

Norstar Applications Module - Memory Calculation Table

Components		Points	add
Operating System	OS/2 No PM - Mandatory	6	6
	Graphical Interface *Note 1	4	
	TSAPI *Note 2	1	
Automatic Call Distribution	MINUET	2	
	Wallboard *Note 3	0	
Dial By Name	Dial By Name	1	
	Dial By Name GUI *Notes 1, 4	0	
Interactive Voice Response	A IVR Run Time Engine	5	
	B Health Care Receptionist	7	
Norstar Voice Mail 3.0	A 2 to 8 Channels *Note 7	2	
	B 10 to 16 Channels *Note 7	4	
Norstar Voice Mail 3.0 Options	A NVM Manager only *Note 5	5	
	B Desktop Messaging (includes NVM Manager) *Note 2 10 Seat License 25 Seat License 50 Seat License 100 Seat License	6	
		7	
		8	
		9	
	C Digital Networking (includes NVM Manager)	7	
	D Digital Networking & Desktop Messaging (includes NVM Manager) *Note 2 10 Seat License 25 Seat License 50 Seat License 100 Seat License	8	
		9	
		10	
		11	
	E AMIS	0	
	F FAX *Note 6	0	
Total score			
System Configuration - If Total score is...	9 or less - order NAM with 8 Megabytes of RAM		
	10 to 17 - order NAM with 16 Megabytes of RAM		
	18 or greater - order NAM with 32 Megabytes of RAM		
Notes	1. Monitor Packages required. 2. Network Interface Card required. 3. Bundled with COM3 card - MINUET required. 4. Part of DBN package. 5. May run via modem, direct connect (null modem) or network - see also Note 2. 6. Digital Fax Card required. 7. Assumes sufficient DVC or MS BIC voice channels.		

Messaging

Norstar Voice Messaging Overview

The voice mail industry is currently experiencing explosive growth as more and more decision makers have become aware of voice mail and auto attendant products and the benefits they can provide for their businesses. An emerging trend in this market is the integration of applications with traditional voice mail and auto attendant to provide the user with one place of access (the mailbox) to retrieve multiple types of information. For example, the use of fax has grown almost exponentially over the last five years, and is predicted to continue at a very high growth rate for years to come. In fact, many organizations are now relying on facsimile as a primary form of communication with customers, suppliers and employees, especially when hard copy documents are required.

Norstar has been a big player in the growing messaging market. The StarTalk product line, with the exception of StarTalk Mini, was introduced in 1990 to provide an integrated voice mail application for Norstar systems. StarTalk addressed the market's needs for growth flexibility, automated attendant, voice messaging, call routing, and AMIS networking functions. The three model sizes of StarTalk products were designed to operate with the Norstar Compact and Modular systems.

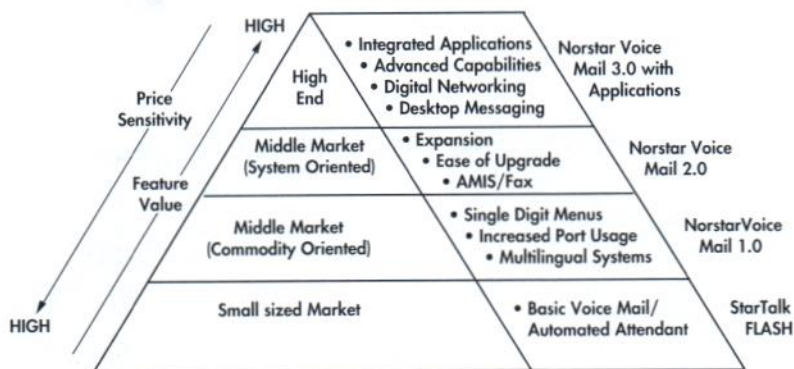
Introduced in 1993, StarTalk Mini was developed to respond to market requirements to provide messaging functionality at the Norstar 3X8 level. StarTalk Mini was a cost-effective, non-expandable, fully integrated voice mail application. It targeted the price sensitive customer who required basic value-added functionality.

The StarTalk family of products were very successful in the marketplace. Building from this position of strength, the portfolio has been evolved to respond to changing market needs. Higher levels of integrated functions and

applications were delivered with the introduction in 1995 of Norstar Voice Mail and StartTalk FLASH.

In 1996, StarTalk and StarTalk Mini were discontinued. Norstar Voice Mail 3.0 and StarTalk FLASH are the current product offerings.

Positioning



Norstar Voice Mail

Norstar Voice Mail 3.0 is the next generation voice messaging for Norstar. Like StarTalk Flash and Norstar Voice Mail 2.1, Norstar Voice Mail 3.0 is specifically designed for Norstar and takes advantage of the Norstar architecture.

Norstar Voice Mail 3.0 meets the needs of larger organizations that want a comprehensive voice mail, auto attendant product that can also offer advanced features. While Norstar Voice Mail 3.0 customers are sensitive to price, they are looking for a system that can automate or streamline their business processes in order to take advantage of new technology as it becomes available in the marketplace. They require a system with a comprehensive voice mail and auto attendant product that can offer advanced features while maximizing computer telephony integration (CTI) applications to achieve increased and improved employee productivity.

Norstar Voice Mail (NVM) 3.0 addresses these customers by supporting the full range of fax applications introduced in NVM 2.0 as well as AMIS, the voice processing industry solution to networking remote voice mail systems. Other options include Desktop Messaging, Digital Networking and Norstar

Voice Mail Manager. The Dial-By-Name (DBN) GUI application is included in every Norstar Voice Mail 3.0 package. DBN GUI introduces a graphical user interface for administration of the DBN application.

Norstar Voice Mail 3.0 is shipped on a Norstar Applications Module, Version II. The NAM II is equipped with a Pentium 100 MHZ processor and provides 100 hours of primary system storage and 16 MB of memory. Norstar Voice Mail is scalable from 2 to 16 voice channels and is available in eight models.

StarTalk FLASH

StarTalk FLASH replaces the discontinued StarTalk and StarTalk Mini systems. "FLASH" memory technology is used to replace all moving parts and increase reliability. It is available in 2 and 4 channel configurations, and from 90 to 180 minutes of storage capacity.

StarTalk FLASH addresses the cost-conscious small business customer who needs sophisticated voice messaging features, and who is not likely to grow beyond 48 mailboxes, and 4 voice channels. Customer requirements that would be satisfied by StarTalk FLASH are the utilization of calling line identification information, automated attendant functions, voice mail, custom call routing, off premise notification, and one level of system capacity expansion.

Norstar Voice Mail and StarTalk FLASH's Intelligent Integration with Norstar

StarTalk FLASH and Norstar Voice Mail are designed for Norstar and function as an intuitive extension of the telephone system.

The integration with Norstar provides customers with the following strong competitive advantages:

- fully integrated visual display
- superior interface using Norstar's soft keys
- "Message for you" indication
- no dedicated ports and immediate port release
- automatic callback to internal caller
- access to system administration from M7310 and M7324 sets
- reduced number of steps required to retrieve messages
- instant status information on any extension or DN
- StarTalk FLASH uses 50% fewer station ports than competitive systems
- interrupt capability
- use of the CLID feature directly from Norstar, with no additional hardware
- ability to dial extension from CCR tree.

How Norstar Voice Messaging Works

StarTalk FLASH and Norstar Voice Mail work with a Norstar Integrated Communications System, offering a receptionist service that routes calls and provides voice message taking capability. When enabled, Norstar voice messaging answers incoming calls and routes the calls to extensions and mailboxes within the system.

Voice messaging components

Norstar voice messaging has three main components: Automated Attendant, Mailboxes (voice messaging), and Custom Call Routing (CCR).

- The Automated Attendant works as a receptionist would when answering incoming calls. Using a voice prompt, it plays a list of options to a caller. If you know which option you want, you can interrupt the Automated Attendant by pressing your selection on the dialpad of any tone dial telephone.

When an option has been selected, the Automated Attendant responds to the command by either routing the call to an extension or mailbox within your company or directing a caller to the Company Directory or Designated Operator.

- Mailboxes are added by the System Coordinator and then initialized by the mailbox owner. They store the voice messages left by callers. Any caller can leave a message after a mailbox is initialized.
- Custom Call Routing (CCR) is a single-digit access application, providing callers with a series of voice prompts and call transfer options.

About the Norstar Voice Messaging Feature Codes

When you are using Norstar voice messaging from a Norstar telephone, you must enter a Feature Code. Feature Codes are used to access the different functions and options of Norstar voice messaging.

- Leave Message Feature Code is used by mailbox owners to leave a message in a mailbox initialized with Norstar voice messaging. To use the Leave Message feature, press .
- Open Mailbox Feature Code is used by mailbox owners to open their Personal Mailboxes. All Personal Mailboxes are protected by a password that is established by the mailbox owner. Use the Open Mailbox Feature by pressing .

- Operator Status Feature Code is used by the System Coordinator, receptionist or Designated Operator to set the Operator Status. When an Operator is not available, the Operator Status must be set to NO. This alerts the Automated Attendant that the receptionist or Designated Operator is not available. This Feature Code is also used to establish whether a business is open or closed. This Feature Code is protected by a password. To use the Operator Status feature, press .
- Norstar voice messaging Directory Number (DN) Feature Code is used to determine the Norstar voice messaging Directory Number(DN). This number is used to forward a Norstar telephone to Norstar voice messaging. allows you to use the Directory Number Feature Code.
- Transfer Feature Code is used to transfer calls to a mailbox. While the call is active, press the memory button where Feature 986 is programmed, then enter the mailbox number where you want to direct the call. The caller is now transferred. Do not put the call on hold. Press to use the Transfer Feature code.
- Interrupt Feature Code is used to interrupt Norstar voice messaging when a caller is listening to the Personal Mailbox Greeting or is leaving a message. This allows you to speak with a caller who has reached your mailbox. Pressing allows you to use the Interrupt Feature Code.

About the Automated Attendant

The Automated Attendant is the Norstar voice messaging receptionist. When enabled, the Automated Attendant answers your company's incoming telephone lines according to the time of day. When the Automated Attendant is enabled, the Automated Attendant menu prompt provides a list of options so that a caller can:

- reach a DN or a mailbox in your company
- leave a message in a mailbox
- select an Alternate Language
- look for an extension or mailbox in the Company Directory
- reach your company receptionist or Designated Operator
- open a Personal Mailbox as a mailbox owner

The Automated Attendant provides callers with commands to use each of these options. A caller must press the button associated with the option they want to activate. For example, to use the Company Directory, press .

About the Company Directory

The Company Directory is a list of mailbox owners registered with Norstar voice messaging. Before any mailboxes can be used, the owners must record their names in the Company Directory. If mailbox owners do not want their names to appear in the Company Directory, they can see the System Coordinator. Names included in the Company Directory can be changed at any time.

About the Mailboxes

A mailbox is a storage place for messages. A Norstar Voice Mail system can have a maximum of 1,000 mailboxes while StarTalk FLASH can have a maximum of 48 mailboxes. There are four groups of Norstar voice messaging mailboxes, including:

- Special Mailboxes
- Personal Mailboxes
- Information Mailboxes
- Network Delivery Mailboxes.

Special Mailboxes are administered by your company's System Coordinator.

The System Coordinator mailbox is used by your System Coordinator as a Personal Mailbox. You can leave messages for your company's System Coordinator in this mailbox.

Personal Mailboxes are assigned by your System Coordinator and maintained by the mailbox owner. A Personal Mailbox can be a User or Guest Mailbox.

- User Mailboxes can be assigned to each user who has an operating Norstar extension. User Mailboxes store messages for users who are unable to answer their telephone.
- Guest Mailboxes provide temporary employees and guest with access to internal messaging and call routing features. Guest Mailboxes do not have an operating extension.

Information Mailboxes are designed to provide an informative message to a caller. This type of mailbox differs from the other mailboxes because it does not take messages. It plays a Personal Greeting to the caller, but does not prompt for, or allow, the caller to leave a message.

Network Delivery Mailboxes are used with the optional AMIS or Digital Networking applications to simplify addressing to remote locations.

How Custom Call Routing Works

Custom Call Routing (CCR) is an application that works with Norstar voice messaging to provide a call routing path that directs incoming calls. CCR enhances the Norstar voice messaging call routing abilities by allowing incoming callers to route their own calls along call paths you create. This application allows you to customize the call routing capabilities to suit your company's needs. CCR does not replace the Norstar voice messaging call routing function, but enhances it.

Designing and Building a CCR Tree

Designing a CCR Tree involves:

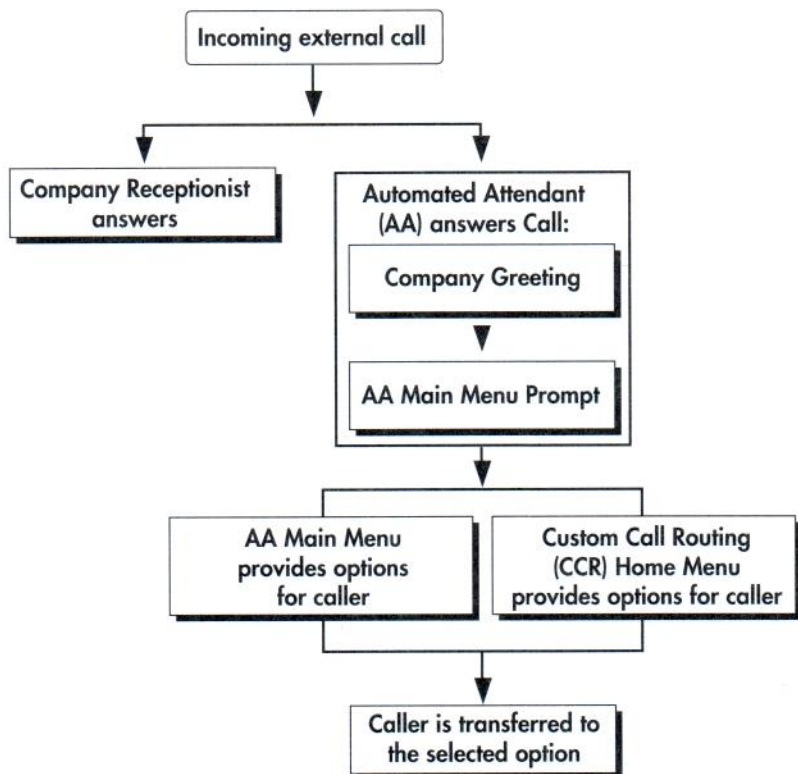
- determining frequently requested departments
- determining frequently called extensions
- making a list of goods and services for promotion in Information Messages
- selecting mailboxes assigned to Leave Message Points
- determining call Destination Types
- recording the prompts and messages

About the Home Menu

The Home Menu is the introductory voice prompt that you record. It provides a list of single-digit options to a caller. After listening to the Home Menu, a caller selects an option by pressing a number on any tone dial telephone. Options in the Home Menu can route a caller to:

- an information Message
- a mailbox to leave a message
- an extension
- another menu

Norstar Voice Messaging Call Answering Overview



Norstar Voice Mail 3.0

Norstar Voice Mail 3.0 is the latest step in the continuing evolution of voice messaging and automated attendant product offerings from Norstar. This release replaces all previous Norstar Voice Mail releases.

The current release delivers the same functionality as the Norstar Voice Mail 2.1 release, plus an enriched set of features and functions on the base system. Also, Norstar Voice Mail 3.0 can be combined with one or more optional applications: Norstar Desktop Messaging, Norstar Digital Networking, and Norstar Voice Mail Manager to further expand its functionality.

Norstar Voice Mail 3.0 runs on the Norstar Applications Module and co-resides with other applications, including Dial-By-Name GUI, MINUET ACD and Norstar Interactive Voice Response (IVR).

Norstar Voice Mail 3.0 provides:

- continued strong CMS/Class integration features
- consistent intelligent integration
- a bilingual system
- new standard features
- enhanced Dial-by-Name GUI application
- continued support for fax messaging
- enhanced support for AMIS Networking options
- options for Desktop Messaging, Digital Networking and Voice Mail Manager

Norstar Voice Mail 3.0 Software Features

Norstar Voice Mail 3.0 provides voice messaging, telephone answering, auto attendant, custom call routing and CMS/CLASS compatibility.

In addition to supporting the same features and functions as NVM 2.1, the Norstar Voice Mail 3.0 adds these new standard features:

- Call Screening allows the mailbox owner to determine who is calling before accepting a call transferred from the Auto Attendant.
- Customizable Directory provides the capability to have name matches looked up in the directory by first name, last name, or both names.
- Timed Delivery of Messages permits a subscriber to create a message and delay delivery of that message until a specified date and time.

- Extended Absence Greeting allows the mailbox owner to advise callers of an extended absence and that the mailbox may not accept messages (at owner's choice).
- Called Party Cancellation of Off-Premise Notification allows the party receiving a remote notification call to turn off that notification.
- Multiple Recipient Addressing messages can be sent to multiple recipients with one set of delivery options applied to all recipients, without the administrator having to program a group list.

Norstar Voice Mail 3.0 also introduces some security enhancements:

- Password Changes—mailbox owners must enter a new password twice when changing it.
- Password Expiry—password expiry can be set to eliminate the need to change the mailbox password.
- Toll-Fraud Prevention Measures/Set-Based Restrictions—the target telephone number will be checked against the Norstar KSU restrictions that apply to the subscriber's telephone set.

Norstar Voice Mail 3.0 introduces some system performance enhancements:

- Response Time Improvements—improves the time from feature invocation to first voice prompt.
- Reduced Holding Time—frees up voice mail channels faster and improves channel utilization.
- Expedited Record Time Out—maximizes channel utilization on the system.
- Site Based Addressing for AMIS and Digital Networking—allows a subscriber to send voice messages to other company locations using the site address which is usually the same as, or similar to, the telephone number of the addressee.
- Enhanced Reporting—three new reports have been added, and two existing reports enhanced.

The new reports are:

- Call Handling and Port Usage Report—provides inbound and outbound traffic statistics on the types of calls handled, and traffic against each port used by Norstar Voice Mail on a seven day rolling basis. This report can be used to identify volume and sources of call traffic and can help determine if additional channels are needed.

- System Configuration Report—shows how the system is configured to include number of ports, outdial channels, group lists, and any options that may be installed on the system, such as Fax Messaging or AMIS.
- Fax on Demand Usage Report—lists all Fax On Demand requests and shows the date and time, item requested, delivery fax number, and CLID of the caller, on a seven day rolling basis.

Norstar Voice Mail 3.0 has enhanced two existing reports:

- Numeric Mailbox Information Report (formerly called the Numeric Subscriber Report)—includes more information about the mailbox which can help identify potential usage problems and reports on all mailbox types, not just subscriber mailboxes as it did in previous releases.
- Custom Call Routing Usage Report (formerly called the Tree Report)—provides two key pieces of information for CCR trees: the greeting table from which the CCR tree is currently referenced and a seven day rolling count of the number of calls received by the tree, and the number of times each path is visited.

Architecture

Norstar Voice Mail 3.0 Models

Norstar Voice Mail 3.0 is available in eight models, and scaleable from 2 to 16 channels. Unlike previous versions of Norstar Voice Mail, Norstar Voice Mail 3.0 is ordered as an SPP code and comes bundled as a Norstar Voice Mail 3.0 Model 2 equipped with a Media Services Base Interface Card (MS-BIC) and, depending on the model size ordered, the appropriate number of software key codes and a Media Services Processor Expansion Card (MS-PEC). The MS-BIC provides voice channels for applications such as Norstar Voice Mail, MINUET ACD and Norstar IVR on the NAM II.

NVM 3.0 Model (Bundled package)	# of channels	# of MS-BIC cards	# of MS-PEC cards	Voice Channel Upgrade Keycodes	# of Fiber Expansion Cartridge Ports	Hours of Memory Storage	Memory RAM
16	16	1	1	8+6	1	100	16MB
14	14	1	1	8+4	1	100	16MB
12	12	1	1	8+2	1	100	16MB
10	10	1	1	8	1	100	16MB
8	8	1	n/a	6	1	100	16MB
6	6	1	n/a	4	1	100	16MB
4	4	1	n/a	2	1	100	16MB
2	2	1	n/a	n/a	1	100	16MB

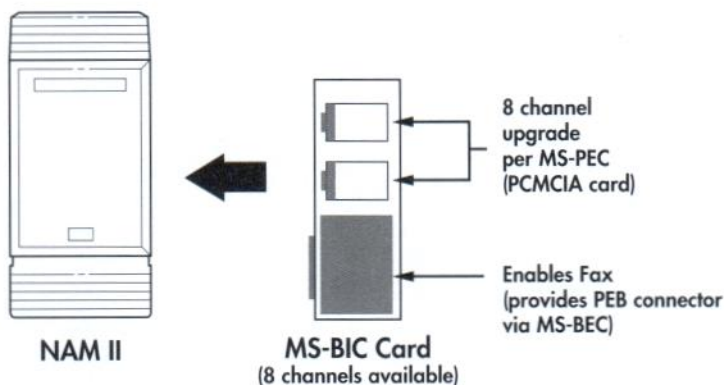
The Norstar Voice Mail 3.0 models have the following differences from Release 1.0 and 2.0 models:

- the NAM II is MS-BIC based, replacing the DVC-based NAM
- hours of storage are increased to 100 hours (from 70 hours on NVM 2.1)
- voice channels can be upgraded in increments of 2, 4, 6 or 8 (from increments of 2 channels with previous models)

Voice Channel Expansion

With the introduction of Norstar Voice Mail 3.0, other applications, specifically IVR and Norstar MINUET ACD, can share voice channels with Norstar Voice Mail. Channels for each application must be enabled by the purchase of the appropriate application-specific keycode or channel license.

Media Services Base Interface Card (MS-BIC)



The Media Services Base Interface Card (MS-BIC) provides voice channels for multiple applications such as Norstar Voice Mail, MINUET ACD and Norstar Interactive Voice Response, to run on the Norstar Applications Module II.

The MS-BIC is the card used to provide voice channels in new Norstar Applications Modules II, whereas previous versions of the Applications Module used the Digital Voice Card. The MS-BIC cannot be used to replace DVCs in existing systems.

Note: DVCs will still be available to upgrade channels in installed base systems.

Channel Capacity

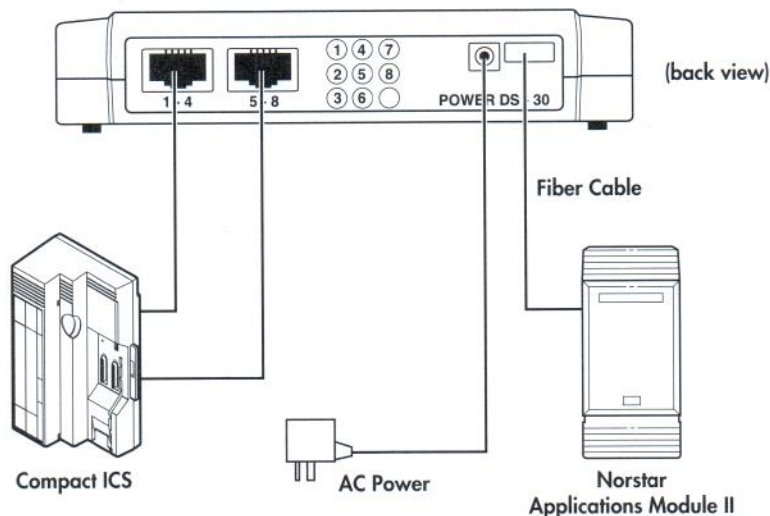
The MS-BIC provides up to 8 voice channels initially and can expand up to a total of 32 voice channels by adding Media Services Processor Expansion Cards (MS-PEC). Each MS-PEC provides an additional 8 channels. While the Norstar Applications Module II has a maximum capacity of 32 voice channels, individual applications might have a different capacity. The Norstar Voice Mail 3.0 can be expanded to a maximum of 16 voice channels, leaving the other 16 channel capacity for other applications.

Channel Activation

The MS-BIC, with the addition of MS-PEC, provides hardware capacity. Each of these channels must be recognized and activated by the software application. For example, a NAM II with a MS-BIC has hardware capacity of 8 voice channels; if the Norstar Voice Mail 3.0 is installed as a Model 6, the

Norstar Voice Mail 3.0 software has activated 6 of the 8 channels, leaving the remaining two channels unactivated.

DS30/Station Port Adapter



The MS-BIC based NAM II connects to the key system unit via a fiber expansion port on the Expansion Card. In order to connect to non-fiber based KSUs (ie. Compact ICS, Modular 8x24, Compact 6x16 and Norstar 3x8 systems), the DS30/Station Port Adapter is required.

The DS30/Station Port Adapter converts up to 8 Norstar station ports to a single DS30 fiber optic line. Up to 8 Norstar station lines, or 16 voice channels, are supported with two RJ-45 connectors. This provides a means to connect a Norstar Applications Module II equipped with a MS-BIC to a Compact ICS, Modular 8x24, Compact 6x16 or Norstar 3x8 system.

Media Services Processor Expansion Card (MS-PEC)

The Media Services Processor Expansion Card (MS-PEC) is a PCMCIA style daughter card that plugs into the MS-BIC and increases the number of voice channels that can be processed by the MS-BIC in increments of 8. Up to a maximum of 3 MS-PECs can be added, providing a maximum of 32 voice channels.

The number of voice channels that can be used by the application(s) is dependent upon the application activating or "turning on" the channels.

Media Services Bus Expansion Card (MS-BEC)

The MS-BEC is a mezzanine-style daughter card that attaches to the MS-BIC, and allows the fax option to be implemented. A PCM Expansion Bus on the MS-BEC card allows the Digital Fax Card to be connected to the NAM via a PEB cable.

Voice Channel Upgrades on MS-BIC based systems

Number of Voice Channels Desired	From 2 Channels	From 4 Channels	From 6 Channels	From 8 Channels	From 10 Channels	From 12 Channels	From 14 Channels
2							
4	2 Channel Key						
6	4 Channel Key	2 Channel Key					
8	6 Channel Key	4 Channel Key	2 Channel Key				
10	PEC*, 8 Channel Key	PEC*, 6 Channel Key	PEC*, 4 Channel Key	PEC*, 2 Channel Key			
12	PEC*, 8 Channel Key + 2 Channel Key	PEC*, 8 Channel Key	PEC*, 6 Channel Key	PEC*, 4 Channel Key	2 Channel Key		
14	PEC*, 8 Channel Key + 4 Channel Key	PEC*, 8 Channel Key + 2 Channel Key	PEC*, 8 Channel Key	PEC*, 6 Channel Key	4 Channel Key	2 Channel Key	
16	PEC*, 8 Channel Key + 6 Channel Key	PEC*, 8 Channel Key + 4 Channel Key	PEC*, 8 Channel Key + 2 Channel Key	PEC*, 8 Channel Key	6 Channel Key	4 Channel Key	2 Channel Key

* Must be ordered separately

Note: This table provides the minimum requirements for enabling additional Voice Channels. If the system is running multiple applications, such as Norstar MINUET ACD, and/or multiple Norstar Voice Mail options (such as Digital Networking and Desktop Messaging), you may require additional hardware to ensure optimum performance.

Digital Voice Card (DVC)



The installed base of Norstar Voice Mails use DVCs to provide voice capability and expand the number of channels available. DVCs will still be available to upgrade channels in installed base systems.

The Norstar Voice Mail models expand from zero to sixteen channels, in two, four, six or eight channel increments, all within the same chassis. Depending upon the configuration, when additional voice channels are required, the upgrade is accomplished by adding a Digital Voice Card (DVC) and/or by using a voice channel upgrade.

Each DVC can provide up to four voice channels. Voice channel upgrades are used to enable unused voice channels on a DVC. Another DVC is required if there are no unused voice channels on any of the cards already installed. A maximum of four DVCs can be installed.

Voice Channel Upgrade

The voice channel upgrade is a software keycode that is generated using a specific identification code for the Norstar Voice Mail unit and is used to enable additional voice channels on the DVC.

Software Keycodes are specific to the Norstar Voice Mail system they are installed on and cannot be used on any other Norstar Voice Mail system.

Voice Channel Upgrades for DVC based systems

Number of Voice Channels Desired	From 2 Channels	From 4 Channels	From 6 Channels	From 8 Channels	From 10 Channels	From 12 Channels	From 14 Channels
4	2 Channel Key						
6	DVC*, 4 Channel Key	DVC*, 2 Channel Key					
8	DVC*, 6 Channel Key	DVC*, 4 Channel Key	2 Channel Key				
10	2 DVCs*, 8 Channel Key, 8 MB of memory*	2 DVCs*, 6 Channel Key, 8 MB of memory*	DVC*, 4 Channel Key	DVC*, 2 Channel Key			
12	2 DVCs*, 8 Channel Key + 2 Channel Key, 8 MB of memory*	2 DVCs*, 8 Channel Key, 8 MB of memory*	DVC*, 6 Channel Key	DVC*, 4 Channel Key	2 Channel Key		
14	3 DVCs*, 8 Channel Key + 4 Channel Key, 8 MB of memory*	3 DVCs*, 8 Channel Key + 2 Channel Key, 8 MB of memory*	2 DVCs*, 8 Channel Key	2 DVCs*, 6 Channel Key	DVC*, 4 Channel Key	DVC*, 2 Channel Key	
16	3 DVCs*, 8 Channel Key + 6 Channel Key, 8 MB of memory*	3 DVCs*, 8 Channel Key + 4 Channel Key, 8 MB of memory*	2 DVCs*, 8 Channel Key + 2 Channel Key	2 DVCs*, 8 Channel Key	DVC*, 6 Channel Key	DVC*, 4 Channel Key	2 Channel Key

* Must be ordered separately

Note: This table provides the minimum requirements for enabling additional Voice Channels. If the Voice Mail 3.0 system is running multiple applications, such as Norstar MINUET ACD, you may require additional hardware to ensure optimum performance.

Memory Upgrades

Memory requirements for Norstar Voice Mail 3.0 are dependent on:

- the number of voice channels enabled
- the absence or presence of optional NVM applications
- whether additional applications are running on the NAM II

All Norstar Voice Mail 3.0 models ship with 16 MB of RAM. Additional memory may be required to support additional applications or optional features. If a system needs more than 16 MB, 2 SIMMS can be added for a total of 32 MB of memory.

The Norstar Applications Module Memory Calculator (for more information, see Chapter 6) should be used to determine the exact memory requirements.

Installing Norstar Voice Mail 3.0 on a NAM I with a 270 MB hard drive requires that the 270 MB primary hard drive be replaced, even if there is a secondary hard drive installed.

Upgrading Software

Norstar Voice Mail 3.0 software is contained on a CD-ROM. Each upgrade requires the CD-ROM software (which can be re-used) and a single-site specific security keycode. A software upgrade from NVM 1.x or NVM 2.x requires that the software be downloaded through use of a CD-ROM reader and boot diskette.

The Norstar Voice Mail 3.0 security keycode is for base Norstar Voice Mail 3.0 software and does not include the extra cost options: Desktop Messaging, Digital Networking, or NVM Manager. However, the Norstar Voice Mail 3.0 security keycode will upgrade Fax and AMIS capabilities on systems where they were already purchased and installed. Where systems have used nearly all of the storage capacity, the upgrade may be unable to continue due to insufficient space.

Norstar Voice Mail 1.x or 2.x customers who plan to install Norstar Voice Mail 3.0 and any of the optional Norstar Voice Mail 3.0 applications may also require additional memory.

Norstar Voice Mail and the AMIS Option

AMIS (Audio Messaging Interchange Specification) is the voice processing industry solution for networking remote voice mail systems provided by different vendors. The AMIS option of Norstar Voice Mail allows the messaging community at one Norstar location to send and receive messages from other messaging communities that support the AMIS protocol.

Each user can be reached via their AMIS address which is a system access number (basically the telephone number of their local system) and their mailbox number. There are three methods by which mailbox owners can send messages to mailboxes in other locations within the AMIS network. All of these methods can designate special time periods and lines on the Norstar Voice Mail system to reduce long distance costs when sending messages.

The AMIS market targets the following customers:

- customers with multi-site operations,
- customers with voice messaging systems from multiple vendors, and
- single-site customers whose primary business associates have AMIS capabilities.

7 Benefits of AMIS

Time and cost savings are two of the most important benefits of AMIS. Hard dollar savings that would improve a company's bottom line include:

- delay in sending of messages until lines are less busy,
- delay in sending of messages until long distance rates are cheaper,
- easier access to all people within the network,
- network wide group lists,
- network wide broadcast messages, and
- network wide reply to messages.

There are three ways in which messages can be sent:

- Direct Addressing,
- Network Delivery Mailbox,
- Site Based Addressing—new with the Norstar Voice Mail Release 3.0.

Direct Addressing

Direct Addressing allows a user to send a message to any mailbox in the network by entering the parameters required by Norstar Voice Mail to reach the destination mailbox. These parameters include:

- the telephone number of the destination site, and
- the destination mailbox number.

Network Delivery Mailbox

The Network Delivery Mailbox stores the parameters required by Norstar Voice Mail to reach the destination mailbox, including the telephone number of the destination site, which line or pool number Norstar Voice Mail uses to make the call and the destination mailbox number.

A person leaving a message simply records the message and sends to the Network Delivery Mailbox. The Network Delivery Mailbox then automatically contacts the intended recipient's personal mailbox and delivers the message.

For this delivery method, a Network Delivery Mailbox must be set up in Norstar Voice Mail for every person in the network to whom you would want to send a message.

Site-based Addressing

Norstar Voice Mail 3.0 introduces a new method of AMIS addressing: Site based Addressing. This allows a subscriber to send voice messages to remote voice mail systems using the site address which is usually the same as, or similar to, the telephone number of the addressee.

Site-based Addressing maximizes the use of mailboxes on system versus the network delivery method which requires a mailbox for every person at the remote site.

Note: Site-based Addressing can only be used if Norstar Voice Mail 3.0 is installed.

Rules for AMIS to function

- Norstar Voice Mail must have Release 2.0 software or greater.
- AMIS software must be enabled at all locations.
- The Auto Attendant must answer the calls from other Norstar Voice Mail systems.
- To send a message using Network Delivery Mailboxes, a Network Delivery Mailbox must be set up for each person in the network that you want to send messages to.

Norstar Voice Mail and the Fax Option

The traditional fax equipment market is flattening, but exponential growth is being experienced in applications and desktop fax.

Users demand applications which provide multimedia solutions, and communications tools which provide solutions for an ever more mobile work force (e.g., portable PC fax, remote access fax mailboxes). Furthermore, all this must be available within the parameters of improved speed, confidentiality and lower cost.

The Fax Option works with Norstar Voice Mail 2.0 or higher to provide the following incoming and outgoing fax capabilities:

- Fax Mail
- Fax-On-Demand
- Fax Broadcast
- Fax Overflow
- Fax Answering

The Digital Fax Card (DFC) is a hardware component for Norstar Voice Mail. In a Norstar Voice Mail 3.0 system, the DFC is installed in an expansion slot on the Norstar Applications Module and uses the voice channels on the MS-BIC, connecting to the MS-BEC using a PEB cable. On NAM I and DVC-based NAM II systems, the DFC uses voice channels on the Digital Voice Card (DVC) and connects to the DVC using a PEB cable.

The fax application is provided by adding a digital fax card and enabling the fax software option. The fax software option provides 2 or 4 channels of Fax.

It is important to note that the fax option does not require dedicated voice channels. The fax option shares the voice channels with Norstar Voice Mail and can use any of the 16 voice channels when required. This means that on a 16 channel Norstar Voice Mail with 4 channels of fax installed, there are still 16 channels of Voice Mail available when the fax is not in use.

Most competitive systems require dedicated channels for fax. In other words, competitive systems would reduce the number of voice channels available to 12, even when fax is not in use.

Fax Mail

Fax Mail is the ultimate end-user fax management tool. With Fax Mail, incoming faxes are stored electronically as "fax messages" in a user's voice mailbox just as a voice message is stored. Fax Mail can be forwarded to another mailbox, directed for printing to any fax machine in the world, or sent to a preprogrammed fax destination. Fax Mail solves many of the inherent problems with fax communications which include:

- confidential faxes arrive at the fax machine for anyone to read,
- incoming faxes can wait for days because recipients do not know they were sent,
- recipients cannot retrieve faxes when they are away from the office, and
- faxes cannot be received because the machine is busy, out of paper, or out of service.

To leave a fax "message" in a personal mailbox, the caller must be phoning from a fax machine. The caller, after being answered by the mailbox, can listen to the greeting and record a voice message before sending the fax or can send the fax without leaving a message. When the caller is ready to send the fax, they simply press the "8" key on the dial pad which causes the Norstar Voice Mail system to end the voice portion of the call and switch to fax receive mode. If a voice message was left, it is the introduction (or voice cover sheet) for the fax message.

Norstar Voice Mail release 2.1 introduced the option of associating a DID number to a fax line.

Fax Mail overcomes security problems because faxes are stored in a mailbox. It also provides notification in the mailbox so recipients know a fax has been sent. In addition, Fax Mail allows users to get their faxes no matter where they are, at home, at another office location, or in a hotel room. Stored faxes in the user's mailbox can be retrieved from any touch-tone telephone and directed to the appropriate fax destination.

Fax-on-Demand (FOD)

Documents for the FOD application can be stored in two ways on the Norstar Voice Mail system: by loading fax from a disk or from a fax machine.

- **Disk loading:** The administrator can load a fax stored on a disk using the system floppy disk drive. This method should result in cleaner, clearer outgoing copy and will be faster for large fax documents than loading from a fax machine. The administrator logs in using Feature 983, activates the function from the Fax Administration Menu, and will then be prompted to insert a disk into the floppy disk drive.
- **Loading from a fax machine:** The administrator (or mailbox owner) logs in the FOD mailbox from a fax machine and is prompted to press START on the fax machine to load a document. After several seconds, the Norstar Voice Mail system switches to "fax receive" mode and emits carrier tone to receive the fax for storage. After storing a fax document, the administrator can then follow the prompts to assign it a unique document number of up to 8 digits.

Accessing a FOD mailbox and retrieving documents:

- On connection to a FOD mailbox, the greeting is played. If the mailbox contains only one document, it is automatically selected. When multiple faxes are stored, the caller is prompted to select a fax document by its number. (In most FOD applications the indexes of available information are published so callers know which document to request.) The caller can select multiple documents and presses the ☐ key when selections are complete.

The system then advances to Delivery Setup. There are two methods of delivery for FOD documents:

- **The One-Call Method:** the caller places the call from a fax machine or other line equipped with fax device and the document is transmitted in the same call as it is requested. In this method, the caller pays for the fax transmission.
- **The Two-Call Method:** the caller places the call from any touch-tone telephone and inputs the fax machine number where the fax is to be delivered. The delivery occurs in a separate call and the host company pays for the fax transmission.

Loading of clean, clear outgoing copy can be accomplished easily. Retrieval is simple and straightforward, even when selecting multiple documents.

Fax Broadcast

Fax Broadcast allows a fax to be sent to multiple destinations, internal and external, with one phone call. The user forwards the fax from the mailbox to a pre-defined Fax System Group List. There can be 99 Fax System Group Lists and each can contain 125 member numbers. Destinations can be fax machines or mailboxes.

Fax Broadcast is a very efficient and cost-effective way to send needed hard-copy information to many individuals.

Fax Overflow

Fax Overflow reduces the likelihood of an incoming fax encountering a busy or no-answer condition. If the destination fax machine is busy, the document is stored in a fax overflow mailbox on the Norstar Voice Mail system.

To use this feature, the administrator must first create a Fax Overflow mailbox and associate it with the extension of the desired fax machine. (Note: the fax machine must be set up as an extension on the Norstar using an Analog Terminal Adapter). When the fax machine is busy or not answering for some operational reason (e.g., out of paper), incoming faxes are temporarily stored in the Fax Overflow mailbox. The stored faxes are then sent from the mailbox to the original fax machine destination when it is once again accepting calls. The system will attempt to deliver the waiting faxes at preset intervals and for a defined number of tries.

Busy fax machines, no answer or out of paper are no longer concerns with fax overflow.

Fax Answering

Fax Answering allows a caller to use the auto-send feature on a fax machine to send faxes to Norstar Voice Mail systems. When an incoming Automated Attendant or CCR call is determined to be a fax transmission, the call is transferred to a pre-defined fax machine extension number.

Fax answering improves coverage.

Norstar Voice Mail Reports for Fax Information

Fax information is shown in two of the Norstar Voice Mail Reports. The two reports are:

- **Directory Report:** identifies Fax-On-Demand and Fax Overflow mailboxes. This report lists the mailbox type, owner's name, extension number, and whether or not the mailbox is included in the company directory and if a greeting has been recorded.
- **CCR Report:** identifies which points on the CCR tree are Fax-On-Demand mailboxes and how many times users have retrieved documents from these mailboxes. This report lists the points on the tree, assignments made to the points and any areas that need administering. The report also shows the points on a tree and the number of times a point was accessed.

Norstar Voice Mail and the Dial-by-Name GUI Application

Norstar Voice Mail 3.0 introduces the Dial-by-Name GUI application. Like the Dial-by-Name application, Dial-by-Name GUI is an electronic phone book, accessible by every set in the Norstar system.

Dial-by-Name GUI offers the same features as Dial-by-Name but introduces a graphical user interface for easier administration. The graphical user interface allows a database to be imported from other applications like Excel, Lotus and Word, using the monitor and keyboard. As well, the GUI component allows you to create and update the directory via the keyboard.

Just as Dial-by-Name is bundled with Norstar Voice Mail 2.0, the Dial-by-Name GUI application is bundled with Norstar Voice Mail 3.0 and runs on the Norstar Applications Module.

Dial-by-Name GUI allows phone numbers to be stored on the Norstar Applications Module and to be accessed on the Norstar Display by spelling the name of the person using the telephone dialpad.

Note: Each 100 entries requires 35K of hard drive space; 1MB of memory uses approximately 4 minutes of storage time.

7

Designed by Cintech Tele-Management Systems, Dial-by-Name GUI greatly increases the functionality and power available to the user. It is available in French and English, and can be used for both internal and external dialing.

A maximum of 10 phone books from five different templates are available on Dial-by-Name GUI. The five templates available are:

- Standard
- Business
- Personal
- Phones
- Product

Note: Templates cannot be deleted.

Dial-by-Name GUI is suited for businesses who wish to supplement their auto dial capability on Norstar, such as:

- School System - parents' names, work numbers, home addresses
- Manufacturing Company - suppliers, branch offices, customers, product prices
- Doctor's Office - hospital numbers, doctors' names, beeper numbers

Norstar Voice Mail and the Desktop Messaging Option

Information overload is driving the need for more effective message management tools. It is now a major activity just to manage messages. Fax communications in North America is increasing annually by 40 percent, and there are an estimated one billion voice mail messages and 1.5 billion e-mail messages received daily in the workplace. The need for a tool that will help employees receive, organize and manage communications is an important driver for this market.

Norstar Desktop Messaging delivers this powerful message management tool. Desktop Messaging allows users to manage all of their voice, fax and e-mail messages from the convenience of their multimedia equipped PC.

Improved organizational communication and increased levels of productivity will result when using Norstar Desktop Messaging. Because users can access all of their messages in one session, either locally or remotely, view fax messages prior to printing, and prioritize which messages they access, they will spend less time on message management and more time on the aspects of their job which drive contributions to the organization.

A server and client component are needed in Desktop Messaging. The NAM is connected to the local network via a Network Interface Card (see Chapter 6 for details) and the Desktop Messaging software runs on the NAM and communicates with the client software installed on each user's PC. There can be up to 100 clients accessing Desktop Messaging simultaneously; this simultaneous access is limited by the number of seat licenses purchased.

The Desktop Messaging user has both a Norstar Voice Mail mailbox for voice and fax mail messages, and a PC mailbox which receives text and other messages from PC-based sources inside or outside the organization, including Internet messages or messages from corporate e-mail networks. When the user accesses a Norstar Voice Mail mailbox from the desktop, incoming messages from both sources are displayed on the PC screen in a single message list. Accessing the voice mailbox from a telephone set provides the user with the voice and fax messages only—PC-based messages cannot be accessed from the telephone interface.

Message management on the desktop uses Microsoft Exchange client software, providing a folder-based approach to storing and organizing messages. Each mailbox contains a standard set of folders:

- INBOX where all incoming messages are stored

- OUTBOX where outgoing messages are placed when ready for delivery
- SENT ITEMS folder where outgoing messages are moved when sent
- DELETED folder which displays messages that have been deleted

Desktop Messaging Benefits

Norstar Desktop Messaging provides a number of benefits to the user:

- maximized investment in the desktop equipment and voice mail channels
- desktop users can perform most messaging functions from the desktop
- LAN network acts as a voice mail channel for internal and external messaging
- increased productivity through prioritizing of messages and ease of management through the desktop interface
- reduced costs through viewing faxes prior to printing and remote access to all messages with only one call
- training time and cost is reduced due to the use of the familiar Microsoft Exchange interface

Hardware Requirements

In order for Desktop Messaging to be installed successfully, the customer site must have either a NAM I or NAM II, an ethernet LAN card and at least 16 MB of RAM. The network must be running TCP/IP over Ethernet, or Token Ring, between the NAM and the client PCs. Each of the client PCs must be equipped with a LAN card, a sound card, microphone and speakers, and one of the following operating systems:

- Windows™ 95
- Windows™ NT 4.0

Software Installation

Norstar Desktop Messaging is an optional application that is installed after Norstar Voice Mail 3.0 has been installed. The customer purchases the software, which is delivered on diskettes, and seat licenses. Seat licenses are available in packages of 10, 25, 50 or 100. Norstar Desktop Messaging is activated with a software keycode which is installed on the NAM. The client software is installed on each desktop PC. While the client software for Desktop Messaging may be installed on more desktop PCs than indicated by

the license, the Norstar Voice Mail system limits the number of simultaneous connections to the number of seat licenses purchased.

Each desktop PC must be equipped with Nortel developed Microsoft Exchange-based client, Ethernet or Token Ring LAN card driver, TCP/IP software, and optional fax view software.

Desktop Messaging Features

From the desktop, the user can

- reply or reply to all messages
- save any message
- view the message envelope information
- file messages
- use the Help menu and access topics on Desktop Messaging
- receive notification of new messages while logged on to Exchange
- print text messages
- create new messages (either text or verbal) using the Compose Message command
- create personal address book entries and lists
- change mailbox password
- prioritize and sort messages by:
 - classification (ie. urgent, certified, normal)
 - date and time
 - sender
 - subject
- play voice messages
- record voice messages
- forward, send, reply to, save, delete and archive voice and fax messages
- add voice annotations to fax messages
- view fax messages

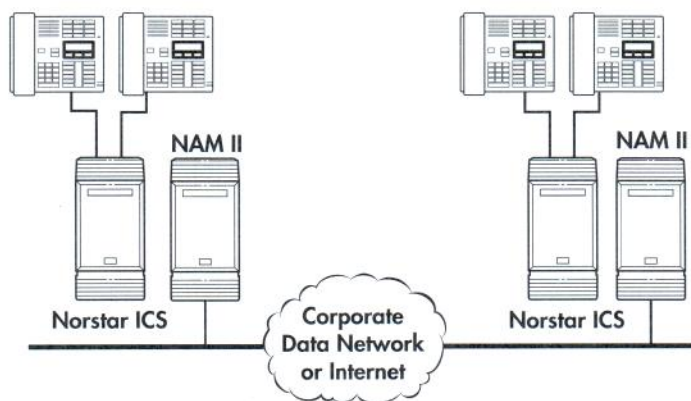
Norstar Voice Mail and the Digital Networking Option

Networking is becoming an essential technology in today's global environment where people work within broader and broader groups, both inside and outside their company.

Digital computer networks have been in use for more than two decades and digital communication is expected to completely replace analog technology within the next decade.

The Norstar Voice Mail Digital Networking option meets the requirements of both these elements. With Digital Networking technology, the sound quality of a sender's voice is not diminished by the quality or bandwidth of the transmitting circuit, as it typically is with analog networking such as AMIS. Digital Networking encodes and transmits voice and fax messages as data files, and sends them from location to location using techniques that assure reliability. When the message arrives at the final destination, it is decoded and presented to the user as a normal voice or fax message—with the clarity that the sender intended.

To digitally network between Norstar Voice Mail Systems, each system on the network must be equipped with a Network Interface Card (NIC). Each networked system must also have installed the Norstar Digital Networking software. Norstar Voice Mail Release 3.0 systems will use Transmission Control Protocol/Internet Protocol, commonly called TCP/IP provided by the IBM OS/2 Connect operating system as its network transport stack, and a network device driver provided by the NIC card manufacturer (see Chapter 6 for details of compatible NIC cards).



Norstar Digital Networking provides the ability to digitally network voice messages with Voice Profile for Internet Mail (VPIM) compliant voice mails, including Meridian Mail systems equipped with Meridian Mail Network Gateway.

Network mailboxes are allocated from the 1000 mailboxes on the Norstar Voice Mail system, and can be configured for either Digital Networking or AMIS use, allowing a customer to use both Norstar networking options if desired.

Digital Networking Benefits

Customers do not want the expense of maintaining separate voice and data networks. Since voice and fax messages are sent as data files, Digital Networking will allow them to use their existing data networks as the transport for fax and voice messages, including their LAN/WAN environment, or even the internet, can be used to connect voice messaging systems.

Benefits include:

- high quality of the message improves communications
- use of network resources for both data and voice transmission is cost effective
- network usage is reduced by sending messages one time to remote recipients at one location
- faster transmission improves communication and reduces transmission time
- Norstar and Meridian Mail enhances enterprise customer network messaging
- time is saved by recording a message once and addressing it to multiple recipients
- flexibility
- transparency of communication
- a message can be forwarded to an individual using only 4 digits, as if they were down the hall
- companies with several branches all appear to be the same (ie. forwarding and replying to messages) because of the standardization of "look and feel"

Hardware Requirements

In order for Digital Networking to be installed successfully, the customer site must have either a NAM I or NAM II, an ethernet LAN card and at least 16 MB of RAM. The network must be running TCP/IP over Ethernet between the NAM and the client PCs. Each of the client PCs must be equipped with a LAN card, a sound card, microphone and speakers, and one of the following operating systems:

- Windows™ 95
- Windows™ NT 4.0

Software Installation

Norstar Digital Networking is an optional application that is installed after Norstar Voice Mail 3.0 has been installed. The software is enabled with a software keycode.

Digital Networking Features

- Forwarding Network Messages—Network messages can be forwarded to other local users, however, the message envelope of the originator of the network message is not preserved and forwarded with the message. Only the body of the message will be forwarded.
- Reply to Network Messages—The recipient of a network message can reply and create an outgoing network message that is already addressed to the originator. The replier can also assign message delivery options before sending the message.
- Delivery Options—Network messages can be specified as certified, urgent and private and are implemented in exactly the same way as for local messages.
- Non Delivery Notification (NDN)—When an error of some type occurs preventing delivery of a network message, a network NDN is generated by the remote system (the system intended to receive the message). If a network message is addressed to multiple sites in a network and some sites cannot receive the message, other sites in the same network recipient lists can still receive the message successfully.

Norstar Voice Mail and the Norstar Voice Mail Manager Option

Norstar Voice Mail Manager is a Windows™-based Graphical User Interface (GUI) option for administering Norstar Voice Mail. The administration can also be performed through a M7310 or M7324 Norstar telephone set or through terminal emulation as it is done today. Norstar Voice Mail Manager provides an easy-to-use interface that is more user friendly than administration from the telephone set or when using terminal emulation. Norstar Voice Mail Manager can be used locally or remotely.

Norstar Voice Mail Manager uses a standard Windows™ interface and uses menus and dialog boxes to administer the system. The main menu has been designed as closely as possible to match the existing Feature 982 and 983 telephone interface.

The Voice Mail Manager option is packaged at no additional cost with each of the Norstar Desktop Messaging and Norstar Digital Networking options. It includes Norstar Voice Mail Manager diskettes and a software keycode.

There are some functions that are not accessible from Norstar Voice Mail Manager but will continue to be administered using Feature 983 on the telephone set. These functions are:

- voice recording and playback (eg. Greetings administration)
- backup and restore to floppy on the NAM
- fax load support from a floppy in the NAM
- CCR tree manipulation

The connection between the Norstar Voice Mail Manager PC and the NAM can be accomplished in three ways:

- across a TCP/IP network, in which case both the NAM and the PC must be connected to the network with a NIC
- locally, via a null modem cable connection over a Point-to-Point Protocol (PPP) connection
- remotely, via dial-up, also using PPP

Norstar Voice Mail Manager Benefits

The principal benefits of the Norstar Voice Mail Manager include:

- PC-based tool using Windows interface
- LAN and WAN allow any PC to be used for system administration
- reports can be printed to a printer connected to the NAM, to a text file that is sent to the PC, or to a diskette
- on-line help with key word search
- remote access to Norstar Voice Mail and its optional applications

Hardware Requirements

In order for Norstar Voice Mail Manager to be installed successfully, the customer site must have either a NAM I or NAM II, an ethernet LAN card and at least 16 MB of RAM. The network must be running TCP/IP over Ethernet between the NAM and the client PCs. Each of the client PCs must be equipped with a LAN card and one of the following operating systems:

- Windows™ 95
- Windows™ NT 4.0

Software Installation

Norstar Voice Mail Manager assumes that Windows™ 95 client PCs have TCP/IP inter-networking capability which is bundled with Windows 95 and Windows NT operating systems. The NAM must be at Norstar Voice Mail 3.0 software and must be equipped with a minimum of 16 MB RAM.

Norstar Voice Mail Manager is installed on the client PC from floppy disks which provide an installation utility which guides the user through the installation process. The installation process has the same look and feel as any Windows-based setup program. When the Norstar Voice Mail Manager application runs the first time, it will set the default Norstar Voice Mail Manager language to the NAM's primary language. Norstar Voice Mail Manager is enabled on the NAM using a software keycode.

StarTalk FLASH

StarTalk FLASH is designed for small businesses looking for a reasonably-priced, feature-rich voice processing system.

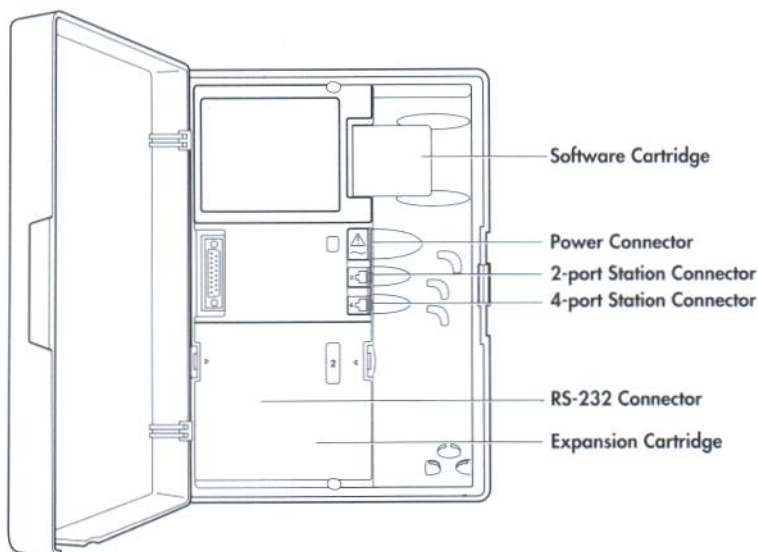
StarTalk FLASH provides

- 24 or 48 mailboxes
- 2 Greeting Tables
- 20 greetings
- 2 CCR Trees
- 2 CCR levels
- 5 programmable numbers for Off-premise Notification

StarTalk FLASH Benefits to the Customer

- cost effective voice mail and auto attendant product
- simplicity and reliability
- state-of-the-art technology
 - CLID
 - enhanced Norstar integration
 - interrupt feature
- 2 and 4 channel models
- product to meet 3X8, Compact and small Modular needs
- reliability and flash memory

StarTalk FLASH Architecture



Software Feature Cartridge:

- Is removable, contains the voice messaging software and system voice prompts.
- Consists of a Personal Computer Memory Card International (PCMCIA) Read Only Memory (ROM) Card.

Power Supply:

- Converts AC line voltage to +5 Volts DC.
- Is connected to the StarTalk FLASH module using a 5-pin DIN connector.

Station Port Connection:

- 2-port: station port connection for the StarTalk FLASH model 2 system.
- 4-port: extra station port connection required for the StarTalk FLASH model 4 system. (Must have the four voice channel expansion cartridge installed).

RS-232 port:

- Used to connect a serial printer or terminal.

Expansion Cartridge:

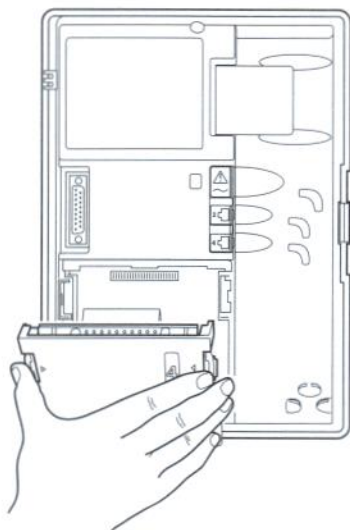
- Allows the module to be upgraded from a two voice channel system to a four voice channel system.

Expanding StarTalk FLASH

Upgrading requires an Expansion Cartridge which provides:

- two additional voice channels,
- an additional 90 minutes of message storage.

When upgrading, all user programming will remain intact.

**StarTalk FLASH Models**

Model 2	Model 4
2 voice channels	4 voice channels
90 minutes of storage	180 minutes of storage
24 mailboxes	48 mailboxes

Two-channel Expansion Module upgrades a Model 2 to a Model 4.

Norstar Voice Messaging Products Compatibility with Norstar Core Software

	StarTalk FLASH	VM 1.0	VM 2.0	VM 2.1	VM 3.0
CICS RIs 2	√			√	√
DR5, Centrex Plus	√	√	√	√	√
MICS RIs 1	√	√	√	√	√
MICS RIs 2	√			√	√

Norstar Voice Messaging Products System Capacity Comparisons

	StarTalk FLASH	VM 1.0	VM 2.0	VM 2.1	VM 3.0
Channels	2, 4	2, 4, 6, 8	2, 4, 6, 8, 10, 12, 14, 16	2, 4, 6, 8, 10, 12, 14, 16	2, 4, 6, 8, 10, 12, 14, 16
Greeting Tables	2	4	4	4	4
Hours of Voice Storage	1.5, 3	12	30	70	100
Maximum Mailboxes	24 or 48	500	1000	1000	1000
Maximum trunk assignment	220	344	344	344	344
No. of greetings	20	40	40	40	40
Voice channel expansion on NAM	n/a	DVC	DVC	DVC	DVC
Voice channel expansion on NAM II	n/a	n/a	n/a	n/a	MS-BIC MS-PEC

Norstar Voice Mail and StarTalk Flash Messaging Feature Comparisons

	StarTalk FLASH	VM 1.0	VM 2.0	VM 2.1	VM 3.0
Administration					
Administer DTMF recognition from a set	√	√	√	√	√
Administer DTMF recognition from an RS232 terminal (from the top level menu)	√	√	√	√	√
Backup and Restore (using high density disks)		√	√	√	√
Create Mailbox Utility				√	√
Custom directory					√
Enable/Disable Port			√	√	√
Expedited Record Time-out					√
Flexible feature code assignment	√	√	√	√	√
Line renumbering utility for MICS Rls 2/CICS Rls 2					√
More than one set access administration	√	√	√	√	√
Terminal Administration (Mailbox, Group list, Admin only)	√	√	√	√	√
AMIS Networking					
Direct addressing			√	√	√
Network delivery mailbox addressing			√	√	√
Site based addressing					√
Automated Attendant Programming					
Call Transfer—Blind	√	√	√	√	√
Call Transfer—Screened	√	√	√	√	√
Caller Display			√	√	√
Calling Name Display		√	√	√	√
CCR levels	2	10	10	10	10
CCR trees	2	4	4	4	4
Change StarTalk's primary language	√	√	√	√	√

	StarTalk FLASH	VM 1.0	VM 2.0	VM 2.1	VM 3.0
CLID recognition	✓	✓	✓	✓	✓
Custom Call Routing (single digit dialing)	✓	✓	✓	✓	✓
Customized AA greeting per greeting table	✓	✓	✓	✓	✓
Dual language system support	✓	✓	✓	✓	✓
Dial Extension number from CCR	✓	✓	✓	✓	✓
Distinguish weekdays vs weekends (as pertains to business hours)	✓	✓	✓	✓	✓
External transfer on Centrex		✓	✓	✓	✓
Flexible business hours per greeting table	✓	✓	✓	✓	✓
Flexible business hours (system wide)	✓	✓	✓	✓	✓
Flexible line ringing to AA using Norstar DRT	✓	✓	✓	✓	✓
Flexible line ringing to AA within StarTalk programming	✓	✓	✓	✓	✓
Multiple Operators (Dial 0) on a greeting table basis	✓	✓	✓	✓	✓
Name Display		✓	✓	✓	✓
Remotely Record Company Greeting			✓	✓	✓
Remotely Set Business Open/Close			✓	✓	✓
Reply based on CLID	✓	✓	✓	✓	✓
Single Digit Menus	✓	✓	✓	✓	✓
Touch tone gate for Auto-Attendant/CCR					✓
Turn AA main menu prompts on/off	✓	✓	✓	✓	✓
Turn global trunk answering on/off	✓	✓	✓	✓	✓

	StarTalk FLASH	VM 1.0	VM 2.0	VM 2.1	VM 3.0
Desktop Messaging					
Client application support on Windows NT					✓
Client application support on Windows 95					✓
Compose/edit fax cover page					✓
Compose/edit fax messages					✓
Fax message manipulation (save/forward) on client PC					✓
Fax message voice annotation					✓
Fax message waiting indication on client PC					✓
Prioritize messages by attribute of choice					✓
Receipt/delivery of messages from MAPI 1.0 servers					✓
Receipt/delivery of voice, fax and simple text via NAM					✓
Toolbar for frequently repeated functions					✓
View fax from client PC					✓
Visual display of commands via menus and icons					✓
Voice message manipulation (save/forward etc.) on client PC					✓
Voice message playback on PC					✓
Voice message recording on PC					✓
Voice message waiting indication on PC					✓
Digital Networking					
Delivery options					✓
Forward Network Messages					✓
Network delivery mailbox addressing					✓
Non delivery notification					✓
Reply to Network messages					✓
Site based addressing					✓

	StarTalk FLASH	VM 1.0	VM 2.0	VM 2.1	VM 3.0
Fax Programming Option					
Fax Answering			√	√	√
Fax Broadcast			√	√	√
Fax line				√	√
Fax Load via Diskette			√	√	√
Fax Mail			√	√	√
Fax-On-Demand			√	√	√
Fax Overflow			√	√	√
Maximum Fax Ports			4	4	4
Simplified fax printing at off-site locations					√
Group List programming					
Administer group lists leading digit	√	√	√	√	√
Group lists	√	√	√	√	√
Max. Group lists	2	99	99	99	99
Max. members to a group list	24, 48	500	999	999	999
Turn group lists on/off	√	√	√	√	√
View group list members	√	√	√	√	√
Mailbox programming					
Assigning Target Attendants		√	√	√	√
Auto Answer with personal greeting	√	√	√	√	√
Automatic reply to Internal Messages	√	√	√	√	√
Broadcast messages	√	√	√	√	√
Called party cancellation of Off-site notification					√
Cascading off-Premise Message Notification	√	√	√	√	√
Classes of service	8	16	16	16	16
Classes of service administration				√	√
Dial 9 in mailbox to change language prompts	√	√	√	√	√
Enable or disable General Delivery mailbox	√	√	√	√	√

	StarTalk FLASH	VM 1.0	VM 2.0	VM 2.1	VM 3.0
Envelope information	√	√	√	√	√
Express Internal messaging	√	√	√	√	√
Forward copy with or without comment	√	√	√	√	√
General Delivery mailboxes	√	√	√	√	√
Group distribution lists	√	√	√	√	√
Guest mailboxes	√	√	√	√	√
Informational mailboxes	√	√	√	√	√
Internal notification-intercom	√	√	√	√	√
Mailbox number 2-7 digit length	√	√	√	√	√
Maximum characters in mailbox name	16	16	16	16	16
Message delivery options	√	√	√	√	√
Message saving (archive messages)	√	√	√	√	√
Message waiting notification	√	√	√	√	√
Multiple target attendants		√	√	√	√
Name confirmation when sending	√	√	√	√	√
Name directory or extension access	√	√	√	√	√
Never Full Mailboxes			√	√	√
Off-site notification - pager/phone	√	√	√	√	√
Off-site notification Numbers	5	5	5	5	5
Outbound Transfer From Mailbox			√	√	√
Personal primary greeting automatically chosen (after being recorded)	√	√	√	√	√
Playback controls	√	√	√	√	√
Prerecorded Greetings storage	√	√	√	√	√
Preview Caller Display Information			√	√	√
Primary and Alternate greetings	√	√	√	√	√
Recover Deleted Messages			√	√	√
Remote Call Forward to Voice Mail			√	√	√
Saved message queue and retention periods	√	√	√	√	√
Simplified Off-site notification setup					√

	StarTalk FLASH	VM 1.0	VM 2.0	VM 2.1	VM 3.0
System Coordinator mailbox	√	√	√	√	√
Turn Return to AA on/off (using AA menu after leaving a message in a mailbox)	√	√	√	√	√
Trouble mailbox	√	√	√	√	√
Urgent Message Notification			√	√	√
Zero as a leading digit in mailboxes	√	√	√	√	√
Miscellaneous					
Baud Rate (default)	1200	1200	1200	1200	1200
Call Screening per set					√
Disable receiving of messages/set					√
Dynamic voice channel allocation	√	√	√	√	√
Enable or Disable Company Directory	√	√	√	√	√
Enable or Disable Voice Mail feature	√	√	√	√	√
Enter extension at any point in a CCR tree	√	√	√	√	√
External volume control while listening to messages	√	√	√	√	√
Interrupt feature	√	√	√	√	√
Max voice port for pager off premises notification	2, 4	8	16	16	16
Multiple recipients per message					√
Redirected DN for ISDN lines					√
Remote upgrade capability					√
Semi-interruptible greetings					√
Simplified Transfer (Feature 986)	√	√	√	√	√
Timed delivery of messages					√
Transfer call externally (caller dials a single digit in the tree)	√	√	√	√	√
Transfer to CCR tree	√	√	√	√	√
Transfer to guest mail box using CLID	√	√	√	√	√
Transfer to guest mailbox using extension	√	√	√	√	√
Trunk answer on/off	√	√	√	√	√

	StarTalk FLASH	VM 1.0	VM 2.0	VM 2.1	VM 3.0
Turnoff General Delivery Mailbox option	√	√	√	√	√
Turnoff Voice Mail Option	√	√	√	√	√
Voice channel sharing					√
Voice Mail option	√	√	√	√	√
Norstar Voice Mail Manager					
Client support on Windows NT					√
Client support on Windows 95					√
Graphical user interface for admin (excluding prompts and CCR tree)					√
NVM Manager administration via network connect					√
NVM Manager administration via PPP connect					√
Reports					
Alphabetical Subscriber	√	√	√	√	√
Call Handling and Channel Usage					√
CCR Tree configuration	√	√	√	√	√
CCR usage					√
CLID dialing Table	√	√	√	√	√
Combined Mailbox Activity and Numeric Subscriber					√
Directory Report	√	√	√	√	√
Downloadable Reports (requires NVM Manager)					√
Fax on demand Usage Report					√
Group lists Report	√	√	√	√	√
Message Usage Report	√	√	√	√	√
Mailbox Activity Report	√	√	√	√	√
Numerical Subscriber Report	√	√	√	√	√
Reset mailbox activity report statistics	√	√	√	√	√
System Configuration Report providing options, lines, greeting tables at al					√

	StarTalk FLASH	VM 1.0	VM 2.0	VM 2.1	VM 3.0
Security					
Centrex Transfer Restrictions			√	√	√
Change Operator Password	√	√	√	√	√
Double entry of new passwords					√
Forced Password Change			√	√	√
Incorrect Password Detection/Lockout			√	√	√
Internal Norstar Set Initialization			√	√	√
Outbound calls restricted to preset line/pool					√
Reset mailbox passwords	√	√	√	√	√
Reset OPERATOR password	√	√	√	√	√
Reset system coordinator password	√	√	√	√	√
Set based restrictions for outbound calls					√

Features and Benefits

Refer to the Feature Comparison chart for the features each product supports.

Administration

Backup and Restore

Data backup and restore applies to all system configuration attributes, but not voice mail messages.

Data is saved in the event of system operational problems.

Create Mailbox Utility

Create Mailbox Utility, when activated, will seek out all the Norstar ICS extensions which do not have mailboxes and will create mailboxes for these extensions with the following default characteristics:

- the mailbox number which will be the same as the extension,
- the name, if available from the ICS,
- the directory listing, if available from the ICS,
- yes, for message waiting.

The other mailbox characteristics must be designated by the system administrator, but having the mailboxes automatically configured will save the system administrator time. The automatically setup mailboxes will

be uninitialized. The final display on the administering telephone set will show the number of mailboxes created. This display must be acknowledged by the administrator to complete this function.

Create Mailbox Utility will not create mailboxes under the following conditions:

- a mailbox with the same number already exists,
- the extension is used by some other mailbox, or
- the extension is identified as a voice mail channel or other "system" extension.

Speeds up mailbox configuration and makes administrator's job easier.

Custom directory

The Custom directory provides the capability to have name matches looked up in the directory by first name, last name or both names.

Regardless of which name is used to search, names are always entered in the format of "last name, first name" and the directory search parameter can be changed without reentering the names.

Enable/Disable Port

The administrator, when necessary, can disable a particular port in the course of diagnosing or containing a system problem. After the problem is solved, the administrator can enable any previously disabled port

Expedited Record Time-out

Prior to Norstar Voice Mail Release 3.0, when callers reached a mailbox and silence was detected by the system, the caller was twice given a set of prompts (asking the caller to speak up, speak directly into the phone or for more options, press #). With Release 3.0, the system allows one retry after silence is recorded and the prompts have been shortened.

This should reduce holding time and helps to maximize system channel usage.

Line renumbering utility for MICS Rls 2, CICS Rls 2

If the Norstar Voice Mail system is connected to a Modular ICS or Compact ICS, and the ICS software is upgraded to version 2.0, the Norstar Voice Mail lines must be renumbered. Renumbering the Norstar Voice Mail lines is divided into two parts:

- Running the line renumbering utility
- Resetting the Line Answer status

Line renumbering can be done from a Norstar M7310 or M7324 two-line display telephone using the Line renumbering utility.

Terminal Administration

For selective system administration, the coordinator can use a terminal connected to the voice mail system instead of a Norstar set; administration can occur either on-site or off-site via a modem.

A coordinator has better control of remote systems; this feature also saves money, because one person can be assigned to manage several systems.

AMIS Networking

Direct addressing

Direct addressing allows a user to send a message to any mailbox in the network by entering the parameters required by Norstar Voice Mail.

Network delivery mailbox addressing

The Network Delivery Mailbox stores the parameters required by Norstar Voice Mail to reach the destination mailbox.

Makes it faster and easier for the user.

Site based addressing

Site-based addressing allows a subscriber to send voice messages to remote voice mail systems using the site address.

Maximizes the use of mailboxes on the system versus using the network delivery method which requires a mailbox for every person at the remote site.

Automated Attendant programming

AA menu prompt

Can be turned on or off for each greeting table.

Call Transfer – Blind

A call can be transferred directly to an extension with ringing starting immediately.

Call processing is faster.

Call Transfer – Screened

Callers are first prompted to record their name, which is then played at the dialed extension; the call is then accepted or rejected without the caller's knowledge.

A called party can avoid unnecessary interruptions

Caller Display (Call Screening support on Call Forward)

When Call Forwarding is enabled, all incoming calls are immediately forwarded to voice mail. When the mailbox owner designates that they want to see caller information displayed at their telephone set, the display will show the name (or number) of the caller, as provided by the central office. This information is displayed and accompanied by an alert tone when the call is being forwarded to voice mail.

Enables user to work uninterrupted when required but still take certain essential calls.

Calling Name Display

The calling name will be stored with the message if Norstar is equipped with CMS/CLASS and Name Display is delivered by the telco.

CLID Dialing Table Report

Lists all entries in the Call ID table. Each entry contains a telephone number, destination type and destination number.

Dial Extension Number from CCR

Any extension number can be dialed from any menu point on a Custom Call Routing tree.

Customize the AA menu prompt per greeting table

Customized for each greeting table to assign greetings to tables.

Dual Language System Support

Callers and users can switch between two languages at either the auto attendant or personal greeting level of system prompts. Companies can use the language of their business (English or French in Canada; English or Spanish in the U.S.).

External Transfer on Centrex

A multi-site company can transfer callers between locations.

Flexible Business Hours for Company Greetings

Prerecorded morning, afternoon and evening greetings can match a company's business hours. Can be assigned to a specific greeting table for specific time of day and for each day of the week rather than on a system-wide basis.

Customer service is improved by eliminating any confusion over hours of operation. Very efficient at routing internal communications.

Flexible Line Rings for Auto Answer

Calls are transferred after a preset number of rings. Users can customize the system to meet their individual needs.

Greeting Tables

Greeting Tables are available for a company to customize the

answering of its incoming lines.

Customers receive the appropriate time-of-day greeting. Also allows a company to customize greetings by department.

Multiple Operators

Once the dial "0" is assigned for a specific greeting table, it will override the designated operator defined in F982.

Personal Greetings based on CLID

A personal greeting is played to Calling Line ID callers only. A mailbox subscriber can program up to 3 specific telephone numbers, each with its own greeting.

Increased flexibility and customer service.

Remote Administration Menu:

- Remotely Record Company Greeting
- Remotely Set Business Open or Closed

From this menu, the administrator can change any company greeting or remotely set the business open or closed. Using Feature 983, the administrator identifies the greeting to be changed and can then play, record, re-record and accept the changed greeting.

These functions are especially beneficial for severe weather or disaster conditions.

Reply based on CLID

Used for automatic replies to numbers collected from CMS/CLASS. Norstar Voice Mail will dial CLID with message by simply pressing the "call" softkey.

Routing Calls based on CLID

The system coordinator can assign up to 100 unique telephone numbers to the Calling Line ID table. Each telephone number is given a destination type. The destination type determines where the call will be routed.

Allows the AA to automatically route incoming calls to specific destinations such as a greeting table, mailbox, extension or CCR tree.

This can be programmed by area code, exchanges or individual telephone number.

Note: For the Calling Line ID table to operate, customers must subscribe to telco Call Display services:

- Call Line Identification
- Automatic Number Identification

Single Digit Menus (CCR)

Available with Custom Call Routing, a caller can select a menu option by pressing a single digit. Single digit dialing improves customer service. Gives customers more detailed information very quickly.

Touch tone gate for Auto-Attendant/CCR

This new feature available with Norstar Voice Mail 3.0 allows the system to quickly determine if the caller has DTMF capability and expedite the call if no DTMF is detected.

In areas where rotary phones are common, or where reliable answer supervision is not provided by the public network, the long hold times previously experienced are eliminated.

Decreases hold times and frees up voice channels previously unnecessarily busied out.

Transfer Point to an External Number from CCR

A caller can be transferred to a number outside the Norstar system.

Transfer (via F986) of an external caller to a specific CCR Tree

Callers can be directed to a specific CCR Tree.

Desktop Messaging

Client application support on Windows™ NT

Desktop Messaging can be run in the Windows™ NT environment. Each PC must also be equipped with a LAN card, an optional sound card, microphone and speakers.

Client application support on Windows 95

Desktop Messaging can be run in the Windows™ NT environment. Each PC must also be equipped with a LAN card, an optional sound card, microphone and speakers.

Compose/edit fax cover pages

Desktop Messaging allows the user to create new or edit existing fax cover pages either textually or verbally.

Compose edit/fax messages

Desktop Messaging allows the user to create new or edit existing fax messages either textually or verbally.

Fax message manipulation

Desktop Messaging allows the user to save, forward, reply to, delete and archive fax messages from their PC desktop.

Fax message voice annotation

Users can add voice annotations to their fax messages.

Fax message waiting indication on client PC

With Desktop Messaging, users will receive notification of new messages while logged onto Exchange.

Prioritize messages by attribute of choice

Desktop Messaging allows users to prioritize and sort messages by: classification, date and time,

sender or subject.

Receipt/delivery of messages from MAPI 1.0 servers

The user receive notification of the receipt/delivery of messages from MAPI 1.0 servers.

Receipt/delivery of voice, fax and simple text via NAM

Desktop Messaging users receive notification of the receipt/delivery of the messages received via the NAM.

Toolbar for frequently repeated functions

Desktop Messaging provides the user with a toolbar containing frequently repeated functions.

View fax from client PC

Users can view faxes from their PC desktop.

Voice message manipulation (save/forward etc.) on client PC

Desktop Messaging allows the user to save, forward, reply to, delete and archive voice messages using their PC.

Voice message playback on client PC

The user can play their voice messages using their PC.

Voice message recording on client PC

The user can record voice messages using their PC desktop.

Voice message waiting indication on client PC

Users are notified when their is a voice message waiting.

Digital Networking

Delivery options

You can specify your network message as Certified, Urgent or Private.

Direct addressing

Direct addressing allows a user to send a message to any mailbox in the network by entering the parameters required by Norstar Voice Mail.

Forward Network Messages

The body of a network message can be forwarded to other local users.

Network delivery mailbox addressing

The Network Delivery Mailbox stores the parameters required by Norstar Voice Mail to reach the destination mailbox.

Makes it faster and easier for the user.

Non Delivery Notification (NDN)

When an error preventing delivery occurs, a network NDN is generated by the intended recipient system.

Reply to Network Messages

The person receiving a network message can reply and create an

outgoing message that is already addressed to the originator.

Site-based addressing

The local subscriber can send voice messages to other company locations using the site address which is usually the same as, or similar to, the telephone number of the addressee.

Maximizes the use of the mailboxes on the system compared to the network delivery mailbox method which requires a mailbox for every person at the remote site.

Fax programming option

Fax Answering

Fax answering allows a caller to use the auto-send feature on a fax machine to send faxes to Norstar Voice Mail systems.

Fax Broadcast

Fax Broadcast allows a fax to be sent to multiple destinations, internal and external, with one phone call.

Fax Load via Diskette

The administrator can load a fax stored on a disk using the system floppy disk drive.

Fax Mail

Incoming messages are stored electronically as "fax messages" in a user's voice mailbox.

Fax-On-Demand

Documents can be stored in two ways: by loading fax from a disk or from a fax machine.

Fax Overflow

If the destination fax machine is busy, the document is stored in a fax overflow mailbox on the Norstar Voice Mail system.

Simplified fax printing at off-site locations

After the method of Fax printing has been chosen, a fax telephone number can be entered in the same manner as a fax extension number.

Group List programming

Group Distribution Lists

Created by the system coordinator, these lists allow the same message to be delivered to a group of users by entering only one address destination or distribution list number.

Time is saved in message preparation, production and especially delivery.

Mailbox programming

Assigning Target Attendants

Each mailbox owner can assign an extension as their dial-0 set

Customer service improves, because transferred calls are answered by individuals more familiar with the mailbox owner's schedule.

Auto Answer with Personal Greeting

After a preset number of rings, answers calls with the personal greeting of the mailbox owner requesting the caller to leave a message.

Callers are given detailed information of the mailbox owner's whereabouts and provided with options (i.e., leave a message or transfer to a receptionist).

Automatic Reply To Internal Messages

A mailbox owner can automatically reply to a message with one key stroke.

This saves time because there is no need to look up extension numbers.

Broadcast Messages

A message can be recorded by a system coordinator and sent to every mailbox; it is played automatically, then erased as soon

as the subscriber ends the session.

This feature improves internal communications by providing system wide messaging capabilities. Every mailbox owner receives the same message.

Called party cancellation of Off-site notification

The party receiving a remote notification call can turn off notification to this destination. This is useful when a subscriber enters an incorrect destination telephone number. When the called party cancels notification the system removes the number from the subscriber message notification destination list and a NDN containing the incorrect telephone number is deposited in the subscriber's mailbox.

Ensures that if messages are delivered to the wrong person, the subscriber receives notification that the message was not delivered.

Cascading Off-Premise Message Notification

You can program five internal or external numbers that will notify a mailbox subscriber when a message is received in the mailbox. Each number is called in sequence if the number before does not answer. Numbers can be designated as a phone, pager or intercom. Depending on the Class of Service programming, each number can be called up to 9 times

at intervals of 5, 10, 15 or 30 minutes per attempt. If a pager is notified, the user must phone in to receive the message. If a phone is notified, the user can access their mailbox once they enter their password. Messages are immediately sent to users wherever they are located, therefore improving both external and internal communications.

Provides better customer service and quicker response time.

Enable or Disable General Delivery Mailbox

Can be disabled or enabled in System Administrator's Mailbox.

Envelope Information

By pressing "7" during or after a message, the receipt time and date of the message is given; for internal calls, the sender's name is also given.

Know exactly when messages were left.

Express Internal Messaging

Internal messages can be sent without opening a person's own mailbox; the sender's name and extension are automatically included.

Improves communication.

Forward Copy with or without Comment

Mailbox messages can be forwarded to other mailboxes

without rerecording the message.

This lets more comments be attached to the original message.

General Delivery Mailboxes

This multi-purpose mailbox can be used to collect messages after hours, from rotary dial telephones, or for people who don't have a mailbox. The default status for the General Delivery Mailbox is enabled. The General Delivery Mailbox can be disabled or enabled as required by your company.

When enabled, callers who reach the General Delivery Mailbox can leave a message. When disabled, callers will hear the Automated Attendant voice prompt. At any time, callers can press zero (0) to reach the operator. Note: If the operator is not available, the Automated Attendant voice prompts play.

Guest mailbox

This mailbox is useful for people who do not have a Norstar extension number, yet need voice mail access.

This helps improve communications internally.

General Delivery Mailbox

This is a "last stop" mailbox for unsuccessful call transfers returned to the operator who is, at that time, also unavailable.

Informational mailbox

A business can play frequently-requested information only, with

no message-taking capabilities.

Eliminates repeating the same information to multiple callers, such as hours of business or the time of a performance.

Message Delivery Options:

Normal, Certified, Private, Urgent

Normal

The message is delivered automatically (default).

Certified

The sender receives confirmation when the message is read.

Private

Messages cannot be forwarded to another mailbox.

Urgent

A message can be queued to play after broadcast messages, but before "normal" messages.

These options increase the user's control over message delivery.

Message Waiting Notification

When new messages are received, "message for you" appears on the user's display; when the mailbox is opened, the number of new and saved messages is heard.

Improves communications, as it eliminates the need to log on to check for new messages.

Name Confirmation when Sending

The name and number of the person or mailbox being contacted appears in the LCD display.

This eliminates delivery errors.

Name Directory or Extension Accessibility

Any system mailbox extension can be found by spelling the user's last name on the dial pad.

This increases a receptionist's productivity; faster processing of calls and improved customer service if the caller only knows the name of the person they are calling and not the extension number.

Never Full Mailboxes

External callers will not be prevented from leaving a voice message in a personal mailbox, even if the mailbox is full. The only time an external caller cannot leave a message in a mailbox is when the system is full. To control misuse of the disk storage space, users with full mailboxes will not be able to retrieve new messages, or create, send, copy or reply to messages until at least one saved message has been deleted. In cases where all the messages in the mailbox are new, the user will be able to listen to at least one before they are prompted that some messages must be erased to retrieve new messages.

Allows for maximum storage capacity of the system and improves customer access to voice mail users.

Outbound Transfer from Mailbox

A caller, while listening to a personal greeting in a mailbox, can

press "7" to be transferred to an external number specified by the mailbox owner. The mailbox owner may choose to include this instruction as part of their greeting or keep it as a private arrangement for certain callers. When this feature is included in the mailbox class of service, the mailbox owner can turn this feature on and off.

Improves customer service by providing a means for urgent contact when necessary.

Playback Controls

Subscribers can move within or between messages, without listening to each message entirely.

People have increased control while listening to their messages.

Personal mailbox

A mailbox can be assigned to a particular person and extension number for their exclusive use. Owner can receive detailed, confidential messages 24 hours a day.

Prerecorded Greetings Storage

Up to 40 prerecorded greetings can be stored on Norstar Voice Mail, 20 on StarTalk FLASH.

Time is saved because a system coordinator does not have to re-record new messages each day; messages remain consistent, thereby giving businesses a more professional image.

Primary and Alternate Greetings

A mailbox subscriber can switch between prerecorded primary and alternate greetings.

This allows for greater flexibility.

Recovering Deleted Messages

During a mailbox session, a user can revisit a previously deleted message and save the message.

Allows user to move quickly through mailbox messages without the risk of accidentally deleting a message that they wish to retain.

Remote Call Forwarding to Voice Mail

The mailbox owner will be able to turn Call Forwarding to Voice Mail on or off from a remote location.

If the user has forgotten to Call Forward or is unexpectedly away from the office, they can still forward to voice mail so that their customers do not have to wait through multiple rings.

Saved Message Queue and Retention Periods

Messages are saved for a preset time period as determined by Class of Service; saved messages are stored in a queue and played after any new messages.

Important messages can be saved, in case some detail is forgotten.

System Coordinator Mailbox

This is used by a system coordinator for administration and

to send broadcast messages.

These special mailboxes ensure no calls are lost, while at the same time improve system management.

Trouble Mailbox

This can be used to report system problems or user troubles.

Urgent Message Notification

The prompt "This message is urgent" will precede playback and display an urgent message. Urgent messages will be moved to the front of the new message queue, ahead of non-urgent messages. When urgent messages are saved, the urgent indication is ignored and the message is queued in chronological order.

Improves user's time management by dealing with most important issues first.

Miscellaneous**Call Screening per set**

After an external caller enters the extension of the person they wish to speak to, the Automated Attendant asks the caller to record their name. The Automated Attendant then transfers the call to the extension, announces the name of the caller and offers the called party the option of accepting the call or letting the caller leave a Voice Mail message.

Call screening is particularly useful where Calling Line Identification (CLID) information

is not available, or when the called party has a set without display capabilities.

This feature is enabled on an individual mailbox basis from mailbox administration.

Call Screening only applies to external calls dialed by callers using the extension dialing capabilities of Auto Attendant or Custom Call Routing.

Improves productivity by allowing the user to choose whether to interrupt work to take a call.

Dynamic Voice Channel Allocation

Voice channels are not dedicated to an Automated Attendant or voice messaging.

Fast, efficient call processing results.

Enable or Disable the Company Directory

The system coordinator can enable or disable access to the company directory for internal and external users.

Enable or Disable Voice Mail Feature

The system manager can globally enable/disable the Voice Mail feature. If Voice Mail is disabled, the calling party will not be answered by the subscriber's mailbox. Instead, the caller will be directed back to the Automated Attendant or CCR application for more options. When disabled, only

F980 and F986 will be allowed to leave messages.

External Volume Control

Users listening to messages from outside the company can increase the playback volume by pressing *.

This feature eliminates message distortion, and ensures users will hear details correctly.

Interrupt Feature

Feature ☐ 9 ☐ 8 ☐ 7

Allows mailbox user to retrieve calls that have been forwarded to voice mail. Call can be interrupted at any point during the mailbox session.

Provides opportunity to retrieve calls if in the office.

Multiple recipients per message

Messages can be sent to multiple recipients with one set of delivery options applied to all recipients. In releases prior to Voice Mail 3.0, each recipient of a multiple addressee message received a unique message with its own delivery options.

When addressing the message, the subscriber can choose to add recipients or delivery options in any order prior to sending the message.

Saves time when sending messages to multiple recipients.

**Semi-interruptible greetings
(Extended Absence greetings)**

A mailbox owner can let callers know about an extended absence.

When the Extended Absence greeting is in use, callers who attempt to bypass it will be prompted that this is a special greeting and the system will give them the option to play the greeting again. A special tone precedes the greeting and alerts callers that it is in effect.

Receiving up to date information about absences contributes to customer satisfaction.

Timed delivery of messages

A subscriber can create a message and delay delivery of that message until after a specified date and time. The message can be delayed up to the number of days specified in the message retention class of service parameter for a given mailbox.

If the Voice Mail system is using the AMIS protocol for networking messages, Timed Delivery messages will follow the standard AMIS rules with respect to call blocking (only urgent message will be sent during call blocking periods).

Subscribers have more flexibility in recording and sending messages.

Trunk Answer On/Off

This feature permits system coordinators to turn on or off incoming trunk lines programmed

for answering by the Auto Attendant.

Voice mail system control is enhanced.

Voice Mail Option

The Voice Mail Option may be enabled or disabled at any time. The default status for the Voice Mail Option is enabled. When enabled, callers can access all mailboxes. Callers who try to reach an extension that is busy, or does not answer, will be transferred to the extension's mailbox.

When the Voice Mail Option is disabled, callers cannot leave messages in any mailbox unless manually transferred to a mailbox. Callers can access Information Mailboxes.

When callers hear that the called party is not available, they get transferred to the Automated Attendant voice prompt. At any time, callers can press zero (0) to reach the operator.

**Norstar Voice Mail
Manager****Client support on Windows NT
and Windows 95**

Norstar Voice Mail Manager assumes that Windows 95 client PCs have TCP/IP inter-networking capability which is bundled with Windows 95 and Windows NT operating systems.

Graphical user interface for admin

Norstar Voice Mail Manager uses the standard Windows interface and uses menus and dialog boxes to exchange information with the administrator.

NVM Manager administration via network connect

The connection between Norstar Voice Mail and the NAM can be accomplished across a TCP/IP network. In this case, the NAM and the PC must be connected to the network with a NIC.

NVM Manager administration via PPP connect

The connection between Norstar and Voice Mail can be accomplished locally via a null modem cable connection over a point-to-point protocol (PPP) connection. It can be connected remotely via dial-up also using PPP.

Reports

Call Handling and Channel Usage Report

This report provides traffic statistics on the types of calls handled, and the traffic against each port used by Norstar.

CCR usage Report

This report has been enhanced to provide the greeting table from which the CCR tree is currently referenced and a seven-day rolling

count of the number of calls received by the tree and the number of times each path is visited.

Fax on demand Usage Report

This report lists all Fax On Demand requests and shows the date and time, item requested, delivery fax number and caller CLID.

Numeric Mailbox Information Report

This report was previously known as the Numeric Subscriber Report and has been enhanced to include more information about the mailbox.

Helps to identify potential usage problems and reports on all mailbox types, not just subscriber mailboxes.

System Configuration Report

This report shows how the system is configured to include the number of ports, outdial channels, group lists and any options that may be installed on the system, such as Fax or AMIS.

Report Generation

Various reports can be printed at the request of the system coordinator.

Reports help to monitor system programming, and simplify updates and customization.

Security

Centrex Transfer Restrictions (Toll Fraud Protection)

This feature provides toll fraud protection for Centrex installations using the Centrex Transfer feature to transfer calls to other Centrex extensions.

If the Centrex Transfer feature is enabled, the extension does not have to be located on the Norstar switch. If the requested extension is not a valid Norstar extension, and the Centrex Transfer feature is enabled, Norstar Voice Mail will instruct the Norstar to perform a "hook-flash transfer" of the caller to the given extension number. This feature is valuable when the Norstar is used in a Centrex installation, but presents a possible security problem, in that a malicious caller or user could be "transferred" to an extension such as 9011, which has the effect of transferring the caller to the international operator, with resulting charges incurred by the owner of the Centrex line.

The Centrex Transfer Restrictions feature counters this security exposure by specifying a set of dialing sequences that will be denied in all cases when the Norstar Voice Mail requests a Centrex transfer.

Change of Operator Password

To improve security, a password can be changed from default "OPERATOR" (67372867) to any four-to-eight digit sequence.

Personally chosen passwords are easier to remember and more secure.

Double entry of new passwords

In releases prior to Voice Mail 3.0, the user entered a password, listened to it and was then prompted to "accept" it. Mailbox owners must enter a new password twice when changing their password.

Higher password accuracy.

Forced Password Change

As a security measure, mailbox owners will periodically be required to change their passwords. The intervals can be set for either 0, 30, 60, or 90 days (0 is interpreted as never changing the password). If the password has expired, it does not prevent access to the mailbox, but the user is prompted that the password has expired and the password must be changed.

Confidence in the security of a communication device is a necessity in the business place.

Incorrect Password Detection and Lockout

The Norstar Voice Mail system tracks the number of incorrect login attempts since the last successful login. When the number of unsuccessful attempts exceeds a threshold, the mailbox will be "locked out" and cannot be opened, even with the correct password, without administrator intervention. The maximum number of login attempts is controlled by the class of service.

Provides additional security.

Internal Norstar Set Initialization

If this option is selected on initial Norstar Voice Mail installation, mailboxes can only be initialized from a Norstar set on the same system as the Norstar Voice Mail.

Provides additional security.

Outbound calls restricted to preset line/pool

Allows the Administrator to specify which line or pool is to be used for Norstar Voice Mail outgoing calls.

Helps control or prohibit toll fraud.
Contributes to cost reduction.

Set based restrictions for outbound calls

Outgoing calls initiated by Norstar Voice Mail are subject to the set based restrictions, regardless of the line or pool selected as the outgoing facility.

Helps control or prohibit toll fraud.
Contributes to cost reduction.

Norstar Call Centers

Wherever there are several people answering similar kinds of telephone calls—at an order desk or reservations office, in a customer service department or technical support center—there is an opportunity to implement Automatic Call Distribution (ACD).

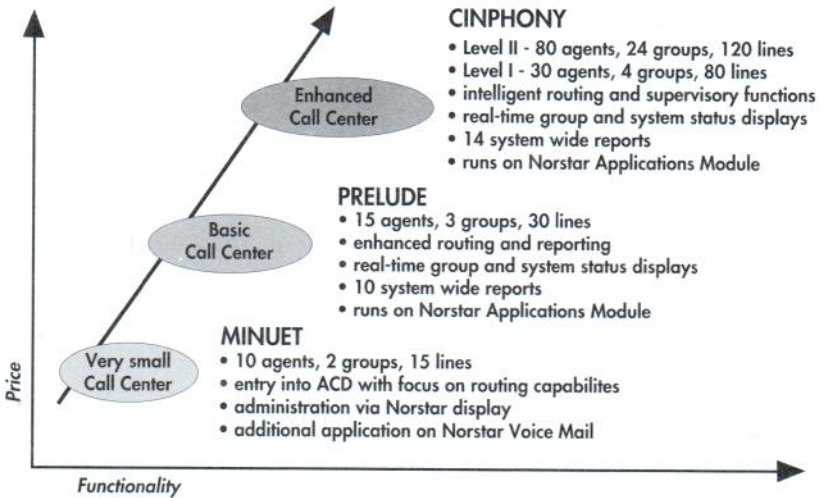
Nortel is pleased to introduce a new product to the Norstar Call Center product portfolio: Norstar MINUET ACD. MINUET ACD is designed with the very small call center in mind, yet still provides many of the features found in PRELUDE and CINPHONY. Each provides businesses, branch offices and departments with an effective tool to manage and organize how calls are distributed. When calls are distributed properly, customers will see increased customer satisfaction, staff productivity, and revenue, as well as an improved office environment.

Today's call centers are various combinations of size, scope and complexity. The relative scale of a call center operation must be measured using more than one of these factors. For example, traditionally there were only large, formal call centers. Today, a small order department with 12 agents might serve a national market and require integration to sophisticated applications such as voice mail.

Together, Norstar's three call center applications target call centers of all sizes and provide solutions for both formal and informal call centers. A company with a formal call center will dedicate several people to answering similar kinds of telephone calls. The individuals, or agents within the formal call center specialize in answering incoming calls and concentrate on that activity.

Informal call centers, on the other hand, also have several people answering similar kinds of calls. However, individuals may or may not be dedicated to answering incoming calls. They may be part-time agents and perform other

duties within the business or they may be perceived as experts who happen to take phone calls.



Norstar Call Center Values

Your customers will be looking to

- Increase revenues
- Reduce costs
- Increase customer service
- Optimize staffing resources

Norstar MINUET ACD, Norstar PRELUDE, and CINPHONY ACD assist companies in managing incoming calls and allow more calls to be processed by the same number of agents.

Research has shown that 34% of callers will enquire about a product or service advertised while on hold. All three Norstar call center applications provide announcements that are used to encourage callers to hold and can be used to advertise products and services while on hold.

In addition, reports and the real-time status display options provided by Norstar PRELUDE and CINPHONY ACD reporting systems can be used to manage individual and agent group performance resulting in increased agent productivity. Industry studies show that an increase in agent productivity can range from 20-40%, depending on current call answering practices.

Increase Revenues

Norstar's call center applications can help your customers create new revenue opportunities by expanding their market coverage, upselling their account base, extending their sales hours and educating their customers.

The applications increase revenues by:

- Increasing the number of calls handled
- Reducing customer hold time
- Eliminating ring/no answer
- Reducing abandoned calls.

In addition to routing calls more efficiently, call center applications can play announcements to callers on hold. Studies have shown that up to 34% of callers will inquire about a product or service that is advertised while on hold. Call center applications can also assist in agent training and measuring performance.

By using the routing features of these applications to automatically route calls, a business can offer extended hours, while providing expanded customer service and increasing revenues.

With Norstar's call center applications, a business can cost effectively expand geographically, even internationally, and can turn marginal accounts into major customers. The following table provides a sample of vertical markets and the potential applications of the call center applications.

Reduce Costs

All three Norstar call center applications can reduce a business's operating costs, sales costs, complaint costs, and warranty and service costs.

MINUET ACD, PRELUDE and CINPHONY reduce operating costs by:

- Minimizing/eliminating receptionist call handling
- Increasing agent satisfaction
- Reducing agent absenteeism and turnover

Norstar PRELUDE and CINPHONY further reduce operating costs by:

- Promoting effective agent training
- Aiding with decisions about staffing needs
- Measuring and reporting agent efficiency promptly and accurately
- Reducing manager time spent on paperwork

More efficient call allocation also translates into reduced long distance charges through better management of phone lines.

Norstar's three call center applications reduce trunk costs by:

- Delay Answer feature if no attendant is available to take the call
- Shortening customer hold time on 800/888 lines
- Reducing the number of returned calls to customers
- Saving time routing calls
- Identifying line usage

Norstar PRELUDE and CINPHONY further reduce trunk costs by:

- Routing calls according to priority
- Utilizing the advantages of Call Identification routing to direct calls to the proper agent and reduce set-transaction times.

All three call center applications reduce sales costs by:

- Improving customer service
- Building customer loyalty
- Decreasing customer complaints

Increase customer service

Norstar MINUET ACD, PRELUDE and CINPHONY offer increased customer service by:

- extending customer reach
- handling calls more effectively
- answering calls immediately
- using the Auto-logout feature to ensure calls will be answered by an available agent and not routed to an unattended agent set.
- allowing businesses to program queues for specific departments

As well, the Norstar Call Center product portfolio offers the caller the option of leaving a message in a voice mailbox.

Optimize staffing resources

The call center applications offer features that help businesses optimize their staffing resources.

The Overflow feature expands the agent pool so that more agents are available to answer calls.

The Wrap feature gives agents time to prepare themselves for the next call which helps in lessening stress for staff.

The call routing abilities helps to balance the workload and off-load work from busy employees. Multi-skilled agents can be logged into more than one group at a time, maximizing their skills.

Call center applications enhance the overall work environment and staff moral by reducing noise levels and ensuring an even distribution of calls.

PRELUDE and CINPHONY call center applications offer real-time status displays to make immediate changes. Also, historical reports assist in predicting staffing requirements and measuring performance.

Vertical Markets & Potential Applications

	Appointment Centers	Catalog Sales	Claims	Classified Ads	Circulation	Credit Authorization	Customer Service	Dispatch	Help Desk	Information	Order Entry	Registration	Reservations	Shareholder Service	Technical Services
Air Freight							✓	✓		✓	✓				
Airlines			✓				✓	✓		✓			✓		
Cable TV Co.	✓						✓	✓	✓	✓	✓				✓
Credit Approval Co.						✓				✓					
Distribution Co.	✓	✓	✓				✓	✓			✓				✓
Banks, Credit Unions						✓	✓			✓				✓	
Gov't Info. Agencies	✓	✓	✓				✓	✓	✓	✓			✓		✓
Hospitals	✓						✓	✓		✓		✓			✓
Hotels/Motels													✓		
Insurance Co.	✓		✓				✓		✓	✓					
Manufacturers		✓	✓				✓		✓		✓				✓
Newspapers				✓	✓			✓			✓				
Public Transit								✓		✓			✓		
Public Utilities	✓						✓	✓	✓	✓	✓				✓
Railroads			✓				✓	✓		✓			✓		
Retail		✓				✓	✓	✓		✓	✓				✓
Telemarketing Co.		✓				✓				✓	✓				
Ticket Offices						✓				✓	✓		✓		
Travel Agencies							✓		✓		✓		✓		
Universities	✓	✓								✓		✓	✓		

Norstar MINUET ACD overview

Norstar MINUET ACD expands the Norstar Call Center product portfolio by providing an entry level ACD solution that targets the very small call center market. It provides businesses with an affordable call center solution for improving customer service and building their business through incoming telephone calls while offering many of the key features usually found on much larger systems.

Norstar MINUET ACD provides call routing and call queuing functionality, agent efficiency features and limited call statistics. It provides a high level of installation, support and maintenance simplicity, as well as ease of programming through the intuitive prompting of the LCD on the station set.

By combining Cintech's ACD software with the suite of applications on the Norstar Applications Module (including Norstar Voice Mail, Dial-by-Name, and Norstar Interactive Voice Response), Norstar MINUET ACD provides small, entry level call centers with an effective tool to manage and organize how calls are distributed.

Other Norstar MINUET ACD features include

- up to 10 active agents
- up to 2 ACD agent groups
- up to 15 assigned lines
- station set-based system administration
- set-based statistics
- Longest Idle and Top Down routing
- Overflow ability

Users of Norstar MINUET ACD require more enhanced queuing and routing capabilities than hunt groups can provide but with minimal statistical reporting. The MINUET call center's primary function is to systematically hold calls in a queue and efficiently route them to employees or agents. Agent supervision and Call Center Management are not priorities for the Norstar MINUET ACD user.

Many call centers with less than 10 agents will require the more advanced functions of PRELUDE and CINPHONY. In this situation, Norstar MINUET ACD may be used to introduce the call center discussion but the customer requirements may point to the PRELUDE or CINPHONY upsell opportunity. Norstar MINUET ACD cannot be upgraded to PRELUDE or CINPHONY,

however the user interface is common to all three applications to minimize agent training requirements when moving to PRELUDE or CINPHONY.

Positioning with Norstar Voice Mail

Norstar MINUET ACD can be positioned as an add-on application for Norstar Voice Mail. Norstar MINUET ACD complements Voice Mail capabilities by adding enhanced Custom Call Routing and call queuing functionality. Norstar MINUET ACD is ideal for situations in which it is desirable for calls to be answered by a person before having the option to be transferred to Voice Mail.

MINUET ACD further demonstrates the multiple application capability of the Applications Module. It also provides a competitive advantage for Norstar Voice Mail by cost effectively adding an enhanced software application without the customer having to duplicate an investment in an application platform.

The voice capability is provided by either a Digital Voice Card or a Media Services Base Interface Card (see Chapter 7 for more information). These voice ports can be configured by the user as either shared or dedicated. A shared voice channel can be used by either the Voice Mail application or Norstar MINUET ACD as needed. A dedicated voice channel indicates that it can be used only by the specific application to which it is dedicated.

Intelligent integration

Norstar MINUET ACD is designed to be integrated with Norstar systems. To ensure easy integration, Norstar MINUET ACD

- is programmed using the M7310 or M7324 (two-line display telephones)
- uses the Norstar displays to assist users in programming. For example, if an agent presses the "Unavailable" key before logging in, a message will instruct the agent to log in first. The functions of the soft keys will also change by activity, bringing up functions when it is appropriate to do so and thus "teaching" the agent how to use the system.
- also uses the Norstar display to show system information and messages such as the group the call is for and the amount of time the person has been waiting.
- uses the indicator keys on Norstar sets to communicate information. For example, when calls are in queue, an indicator next to the "Login" key on the agent's set will flash. As the number of calls in queue increases, the indicator flashes to highlight urgency.

- allows agents to log in from any Norstar station set.
- does not require station sets to become dedicated to ACD when an agent logs in. For example, a logged in agent can still make an intercom call. In addition, standard Norstar M7208, M7310 and M7324 telephones are used for agent positions.
- can share physical voice ports with other applications such as voice mail to play announcements to callers.
- allows calls to be transferred between Norstar Voice Mail and Norstar MINUET ACD.
- provides statistics that can be viewed when using the M7310 or M7324. The following statistics will be displayed
 - number of calls answered
 - number of calls abandoned
 - number of calls disconnected
 - average time to answer
 - average time to abandon
 - number of calls per category code.

Agent functions can be programmed onto memory keys on Station sets. When a call is sent to an agent set, the LCD shows the Group Name and length of time the call has been in the queue.

Norstar MINUET ACD can integrate Incoming Call Line ID directly from the Norstar system. If ICLID is selected for a line, Norstar MINUET ACD will not answer the call for 5 seconds (default) or until the ICLID is received from Norstar. The ICLID information is displayed on the LCD of the agent receiving the call.

Installed base

The introduction of Norstar MINUET ACD creates an excellent opportunity for Norstar key systems and Norstar Voice Mail systems customers to economically upgrade their systems to include the Automatic Call Distribution features of Norstar MINUET ACD.

Existing Norstar Voice Mail customers simply require the Norstar MINUET ACD software package and 16MB of RAM on their Norstar Applications Module to implement a call center solution. The Norstar MINUET ACD package includes a Norstar Voice Mail 3.0 upgrade key code.

Norstar MINUET ACD offers Norstar key system users requiring call center functionality, the opportunity to bring Norstar Voice Mail and MINUET into their installed system.

Hardware requirements

Norstar MINUET ACD is compatible with the Norstar Applications Module I and II with either Digital Voice Cards or Media Services Base Interface Cards installed. 16 MB of RAM is required.

Norstar MINUET ACD runs with Norstar Voice Mail release 3.0 on the NAM.

Agents can use the M7208, M7310, M7324 or analog station sets for their daily activities. System programming is performed on the M7310 or the M7324 sets.

A dedicated Backup Station set is required. In the unlikely event that ACD becomes unavailable, the Backup Station set handles incoming ACD calls. A M7324 is recommended, but for systems with less than 8 lines, an M7310 can be used.

Each station set must have at least 2 intercom buttons. ACD lines ring on intercom buttons because lines are not assigned to the DN.

The use of an Uninterruptable Power Supply (UPS) is strongly recommended to act as a short term generator and to guard against power surges and dips.

The Norstar MINUET ACD package includes:

- Norstar MINUET ACD software with 4 active voice channels
- MINUET ACD Administration Guide
- 1 set-up kit (includes 10 key cap inserts and quick reference cards and 2 administrative key cap inserts and quick reference cards)
- Software Warranty Agreement
- 1 Norstar Voice Mail 3.0 upgrade key code.

Norstar PRELUDE and CINPHONY ACD

With the new unbundled release, 2.00.18, and the new bundled release, 2.00.19, PRELUDE and CINPHONY are compatible with MICS 2.0 and CICS 2.0. MICS 2.0 which cannot run previous versions of PRELUDE and CINPHONY. As well, the new releases are Year 2000 compatible and support ISDN-BRI trunks for added speed and efficiency.

PRELUDE overview

PRELUDE is designed for the small call center with up to 15 active agents and introduces the Norstar user to ACD features with powerful capabilities. Features include:

- up to 15 active agents
- up to 3 ACD agent groups
- up to 30 assigned lines
- PC-based configuration and administration
- Real-time group and system status displays
- 10 system wide reports
- advanced call routing tables which are customizable and easily configured
- support for CLID/ANI allows intelligent routing and effective integration with CTI
- up to 16 voice channels
- optional status display for Windows.

The PRELUDE user has a small to medium-sized call center and the need to effectively analyze the performance of their call center agents via real-time group and system status displays and system-wide reports. Call Center Management, as well as advanced call queuing are important to the PRELUDE customer.

CINPHONY ACD overview

CINPHONY is a feature rich ACD with additional capacity, advanced features and supervisor functions to meet the demands of the growing call center. Typically, the mature small call center profile includes several agents grouped under one or more supervisors and dedicated to the business of handling incoming calls. In addition to the features of PRELUDE, CINPHONY offers call center features such as

- two different levels
 - Level I has up to 30 active agents and 4 agent groups
 - Level II has up to 80 active agents and 24 agent groups
- up to 120 assigned lines
- intelligent routing based on DNIS and DID
- Call Categorization capabilities
- priority queuing
- 14 management reports
- extending the hours of the call center by using a PBX or Centrex transfer to send the call to an “open” call center
- exporting call records to other software packages for specialized reporting.

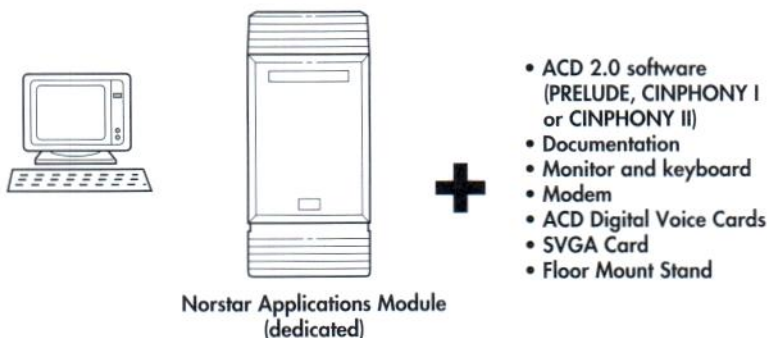
CINPHONY users have growing call centers and require advanced functionality in order to effectively and intelligently route incoming calls. They also place a great deal of emphasis on the need to manage their call center via advanced reporting capabilities and require agent supervisory tools to guarantee quality customer service. The advanced functionality of CINPHONY allows the customer to efficiently handle increasing volumes of calls.

Norstar PRELUDE and CINPHONY ACD Architecture

Norstar PRELUDE and CINPHONY ACD are an exciting integration between Nortel's Norstar and Cintech's ACD. Combining Cintech's ACD software with the Norstar Applications Module (see Chapter 6 for more information about the Applications Module) allows quick and easy upgrades and maintenance.

Norstar PRELUDE and CINPHONY ACD are available as both Bundled and Unbundled Packages with Norstar. The Bundled Package is provided as a turnkey fully supported system, so the customer is not required to make any further purchases. For customers who wish to use their own PC, an Unbundled Package is also available.

Bundled Package



With the bundled Norstar PRELUDE and CINPHONY ACD package, the CINPHONY or PRELUDE software is preloaded on a dedicated Norstar Applications Module along with the appropriate number of ACD Digital Voice Cards. A monitor, keyboard, mouse, modem, SVGA card and floor mount stand are included. The Bundled Package also includes remote maintenance software, which allows technical support of a Norstar PRELUDE and CINPHONY ACD system over the modem.

Since the Norstar PRELUDE and CINPHONY ACD module has a keyboard and monitor attached, it will most often be installed as a floor mount model.

All models can be expanded from the smallest model to up to 16 voice channels by adding Digital Voice Cards. The Digital Voice Card provides

voice capability and is used to expand the number of voice channels on Norstar PRELUDE and CINPHONY ACD modules.

Each ACD Digital Voice Card can provide up to four voice channels. Increments of two channels can be activated with a software Activation Key. A maximum of four ACD Digital Voice Cards may be installed per ACD system.

Note: The ACD Digital Voice card is the same hardware as the Voice Mail DVC, but includes an ACD 2-channel software Activation Key.

Customers purchase ACD Digital Voice Cards based on their individual needs. Fewer voice channels are needed than the average number of callers waiting in queue. For purchasing decisions, a three to one ratio of callers in queue to voice channels is common.

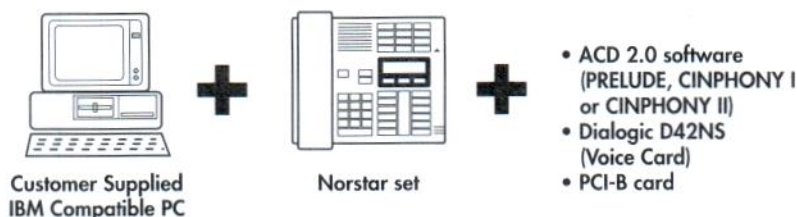
Callers in queue:voice channels = 3:1

Voice cards are not in use while a caller is on hold and waiting for an agent, unless the caller is listening to an on-hold announcement.

A UPS (Uninterruptable Power Supply) minimizes the risk of losing valuable real-time calling information due to events of nature. It acts as a short term generator in the event of power outages and guards against power surges and dips.

A Backup Set must be designated for the ACD system. The set must be connected in order for the system to function. The Backup Set can be any Norstar set on the system. Calls will be routed to this set in the unlikely event the system goes down.

Unbundled Package



For customers who wish to use their own PC, an unbundled version of the Norstar PLUS PRELUDE and CINPHONY ACD is available. It includes:

- ACD 2.0 software (PRELUDE, CINPHONY I and CINPHONY II)
- Dialogic D42NS voice card
- PCI-B card.

In this configuration, the Norstar will communicate with PRELUDE or CINPHONY ACD software installed on an IBM compatible PC. The PC must include the following minimum requirements:

- 486 or greater (IBM PS/2 Models excluded)
- MS-DOS version 6.22 or higher
- 8 MB RAM
- 270 MB hard drive
- 1.44 MB 3.5"
- 14" VGA Monitor
- Video Card
- Standard Keyboard
- Surge Protector
- 14,400 baud Fax/Modem (optional)
- 9 pin dot matrix printer (optional)

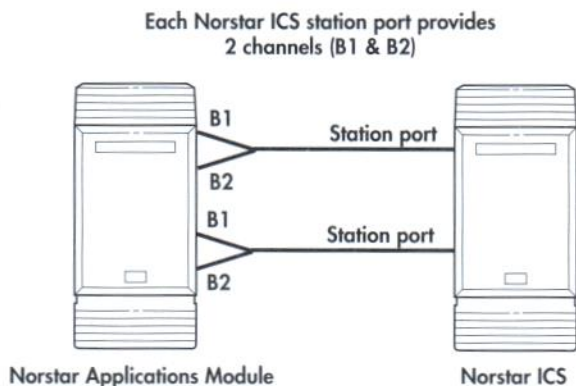
The Personal Computer Interface - B (PCI-B) card is required to connect with the Norstar. The Dialogic D42NS provides voice capability. Each card requires four Norstar station ports.

The distributor and/or end user provides the PC, voice cards and other required hardware. The distributor installs all components on-site at the customer location. The customer provides their own PC support.

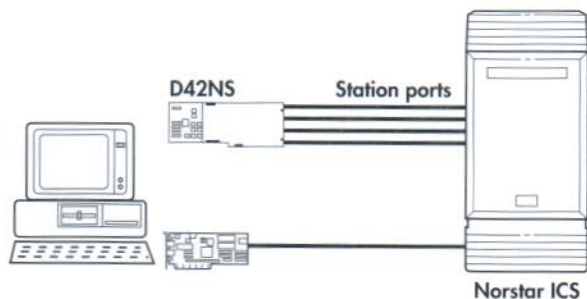
In addition, it is strongly recommended that a customer purchase a modem (remote maintenance software is available) and a UPS (Uninterruptable Power Supply). The modem allows dial-in access for ACD software support, dial-in access for assistance with training, and minimizes the need for on-site troubleshooting visits.

A Backup Set must be designated for the ACD system. The set must be connected in order for the system to function. The Backup Set can be any Norstar set on the system. Calls will be routed to this set in the unlikely event the system goes down.

Connection to Norstar-Bundled Package



Connection to Norstar-Unbundled Package



PRELUDE Software

PRELUDE is designed for the small call center with up to 15 active agents and introduces the Norstar user to ACD features with powerful capabilities. It offers many of the sophisticated call center features found on larger, more expensive ACD systems.

These features include:

- ten different system-wide reports
- real-time Group and System Status Displays
- digital voice announcements and messages stored on disk
- longest idle call distribution
- call overflow and other advanced call routing
- agents can login at any Norstar set.

CINPHONY Software

CINPHONY I expands on PRELUDE and is a feature-rich ACD with additional capacity and supervisor functions to meet the demands of the growing call center. It is designed for call centers with up to 30 active agents. CINPHONY II adds additional capacity to CINPHONY I systems, targeting small to medium-sized call center locations with up to 80 active agents.

Building on the features offered by PRELUDE, CINPHONY I and II both offer additional call center features such as:

- fourteen different system-wide reports (including DNIS and DID reports)
- allowing agents to handle calls in several groups
- intelligent routing based on CLID, ANI, DNIS and DID information, call directed routing
- Call Categorization capabilities
- Priority Queuing and routing based on the skill level of agents
- the ability to extend the hours of the call center by using a trunk to trunk or Centrex transfer to send calls to an "open" call center
- exporting call records to other popular software packages for specialized reporting
- emergency routing.

In addition, CINPHONY provides supervisory tools to control the call center environment including the following features:

- display messages on a Norstar telephone display (messages such as the number of calls in queue or a request for "HELP" from an agent)
- record a call to help ensure call center quality and to assist in training agents
- support of wall boards
- silent monitor and "JOIN" capabilities
- create and change announcements easily
- an alert to make a supervisor aware whenever too many agents are logged out at the same time.

Bundled Models Available

PRELUDE and CINPHONY ACD Suites include value added features that offer significant benefits to customers. Where a lower price is essential, all models are available without the Suites.

Model	Voice Channels	DVC Cards	Norstar* TCM Ports	Hard Drive Size	Memory RAM
Norstar PRELUDE Suite 4	4	1	2	528 MB	8 MB
Norstar CINPHONY I Suite 4	4	1	2	528 MB	8 MB
Norstar CINPHONY I Suite 8	8	2	4	528 MB	8 MB
Norstar CINPHONY II Suite 12	12	3	6	528 MB	16 MB
Norstar PRELUDE - 4	4	1	2	528 MB	8 MB
Norstar CINPHONY I - 4	4	1	2	528 MB	8 MB
Norstar CINPHONY I - 8	8	2	4	528 MB	8 MB
Norstar CINPHONY II - 12	12	3	6	528 MB	16 MB

*All ACD models come with an internal 14.4 modem installed. The modem can be connected to the Norstar system via an ATA (Analog Terminal Adapter) or directly to an external line. An additional Norstar station port will be required per model when connecting via an ATA.

PRELUDE and CINPHONY Optional Feature Packs

The Optional Feature packs provide PRELUDE, CINPHONY I and CINPHONY II ACD models with additional features and are available via a software upgrade.

In addition to all of the functions of PRELUDE software, the PRELUDE Optional Feature Packs offers:

- 2500 Set Agent Support
- Round Robin and Top Down Agent Selection
- Delayed Answer
- Line Transfer and Link Transfer
- Scheduled Configuration Changes
- Scheduled Report Changes
- Agent Profile by Group Report

The CINPHONY Optional Feature Pack includes all the functionality of CINPHONY I and CINPHONY II standard software, all of the PRELUDE Optional Features listed above, and the following:

- DID/DNIS/Target Line Support
- Emergency Routing
- Data Export
- Agent Record Call
- Call Categorization by Agent Report
- Destination Number Report

Add-Ons

Automated Attendant

The Automated Attendant is a cost effective solution for businesses that wish to direct calls to several different areas.

Automated Attendant commands can be used in the routing table to provide the caller with a recorded message. The caller then follows announcement instructions to direct his/her call. The caller can press designated keys to direct the call to a Group, extension, answering device, or voice mail system or, if a caller has been on hold for a designated amount of time, the call can be bumped to the Automated Attendant where the caller can be offered options. Calls can be transferred out of PRELUDE and CINPHONY or directed to a specific call center group.

Status Display For Windows™

This Windows™-based application can be installed on one to four Remote PCs (connected to the Norstar PRELUDE and CINPHONY ACD processor) to receive Agent Statistics, Group Statistics, System Statistics, and Voice Port Status.

A Status Display for Windows Broadcast Box must also be installed, if connecting more than one PC.

The user can then display this data in several ways: Group Detail Status, Group Summary Status, System Status, Voice Port Status, Graphical Group Status, and Graphical System Status.

The user can also customize status display by selecting one or more Groups, Alarm Limits on statistics, and Agent Statistic field colors. These are Windows based "Pop Out" real-time status screens.

Wallboard Support Software

A wallboard displays Group Name as well as:

- number of Calls in Queue
- longest time of call in queue
- average time to answer
- average time to abandon

The wallboard provides a great self-management tool for agents and supervisors.

Note: A wallboard must be supplied by the customer or distributor.

Either a Wallboard or Status Display for Windows can be connected to Norstar PRELUDE and CINPHONY ACD. They cannot run simultaneously.

Printer Requirements

An Epson LX300 dot matrix printer is available as an option to print reports from the ACD systems. Norstar PRELUDE and CINPHONY ACD can support over 125 different types of printers. Printer requirements include: 132 characters per line, parallel port, HP Laser Jet or Epson Compatible.

Upgrading Voice Channels

Total number of Voice Channels	PRELUDE 4 channel	CINPHONY I 4 channel	CINPHONY I 8 channel	CINPHONY II 12 channel
4				
6	DVC	see Note 1		
8	DVC, ACD key	DVC see Note 1		
10 (see Note 2)	2 DVCs, ACD key	2 DVCs	DVC	
12	2 DVCs, 2 ACD keys	2 DVCs, ACD key	DVC, ACD key	
14	3 DVCs, 2 ACD keys	3 DVCs, ACD key	2 DVCs, ACD key	DVC
16	3 DVCs, 3 ACD keys	3 DVCs, 2 ACD keys	2 DVCs, 2 ACD keys	DVC, ACD key

Note 1: The CINPHONY I software includes the capability for 8 voice channels. When a DVC is added to the Norstar CINPHONY 1-4 channel system it is automatically upgraded to 8 ports. The ACD 2 Channel Software Activation Key which comes with the DVC card is not used, nor is a second Key required to turn on the second two channels of the DVC card.

Note 2: When upgrading to a 10 Channel system it is necessary to add 8 MB of RAM (for a total of 16 MB in the system).

The chart above shows the components that need to be added to the base system to reach the desired number of channels. All Norstar PRELUDE and CINPHONY ACD modules can be expanded from 2 to 16 voice channels in two channel increments, all within the same chassis.

Depending upon the configuration of the Norstar PRELUDE and CINPHONY ACD, when two additional channels are required, the upgrade is accomplished by adding either an ACD DVC or enabling two voice channels on a DVC or D42NS card.

An ACD Digital voice Card is required if there are no unused channels on any of the cards already installed. A 2-channel Software Key is required to enable unused voice channels on an installed DVC.

Note: The ACD Digital Voice Card is the same hardware as the Voice Mail DVC, but includes an ACD 2-channel software Activation Key.

The 2-channel activation software key is a software diskette that is used to enable the voice channels on the DVC. The diskette contains an authorization code and instructions on how to perform the upgrade. (A call will be made to Cintech's support line to enable the voice channels.)

One Activation diskette is included with the DVC to enable the first 2 channels on the DVC. An additional 2-channel Software Activation Key is required to enable the second two channels. The 2-channel software activation diskettes may be used only once and cannot be used on other systems.

Integration with Norstar

Norstar PRELUDE and CINPHONY ACD are designed to be integrated with Norstar systems. Both PRELUDE and CINPHONY use the Norstar displays to walk users through using features when it is appropriate to do so.

For example, if an agent presses the "Unavailable" key before logging in, a message will instruct the agent to login first. The functions of the softkeys will also change according to activity, bringing up functions when it is appropriate to do so and thus "teaching" the agent how to use the system.

On the bundled version, DVCs are used to provide the voice capability. PRELUDE and CINPHONY bundled on the Norstar Application module use both B1 & B2 channels on Norstar. This means that one station port on the Norstar system provides access to two voice channels. An important consideration for customers close to capacity on station ports.

Norstar PRELUDE and CINPHONY have the ability to integrate Calling Line ID features directly from the Norstar system without adding additional hardware devices.

Norstar PRELUDE and CINPHONY ACD interact seamlessly with Norstar, interface with its users exactly as Norstar does, and offer greater flexibility and features than any ACD system available to smaller call centers today.

Benefits of Scalability in PRELUDE and CINPHONY

- Enhancements can be added via a software upgrade.
- Easy migration from PRELUDE to CINPHONY via software upgrade.
- Eliminates the need to replace the main system. Each Norstar PRELUDE and CINPHONY ACD model may be expanded up to 16 voice channels within the same chassis.

Norstar PRELUDE and CINPHONY ACD modular design means that your customers can:

- build a call center to meet their needs today, and
- add features, functionality and capacity as their Norstar PRELUDE and CINPHONY ACD requirements grow.

Norstar Voice Messaging positioning

Calls can be transferred between Norstar Voice Mail, StarTalk FLASH or StarTalk systems and Norstar PRELUDE and CINPHONY ACD. Calls may be transferred from the Voice Messaging system into the ACD or from the ACD into the voice messaging system.

Compatibility with Norstar systems

Norstar ICS	MINUET 1.00	PRELUDE/CINPHONY		
		2.00.13	2.00.15	2.00.18/19
3x8 DR1				
3x8 DR5				
3x8 DR5.1				
Compact DR1				
Compact DR2				
Compact DR5				
Compact DR5 DS (Note 1)	√	√	√	√
Compact DR5.1				
Compact DR5.1 DS	√	√	√	√
Modular DR1				
Modular DR2				
Modular DR3				
Modular DR3 CTX				
Modular DR4				
Modular DR5 (Note 2)	√	√	√	√
Modular DR5 CTX+ (Note 3)	√	√	√	√
Modular DR5.1	√	√	√	√
MICS Rls 1T1	√	√	√	√
MICS Rls 1T1 CTX	√	√	√	√
MICS CDA XC 1.0	√	√	√	√
MICS XL 1.0 (U.S. only)	√	√	√	√
MICS USA XC 1.0	√	√	√	√
MICS Rls 1 T1 DR 1.1	√		√	√
MICS CDA/USA XC 1.1	√		√	√
MICS 2.0	√			√
CICS 1.0	√		√	√
CICS 2.0	√			√
Norstar Voice Mail 2.1 (Note 4)			√	√
Norstar Voice Mail 3.0 (Note 5)	√		√	√

Note 1: Minimum version is NT5B10CE Rls 04 (Eng/Fre) NT5B10DE Rls 04 (Eng/Spa)-SP:30NSE08

Note 2: Minimum version is NT5B24CH Rls 04 (Eng/Fre) NT5B24DH Rls 04 (Eng/Spa)-SP:30MUL07

Note 3: Minimum version is NT5B29CE Rls 02 (Eng/Fre) NT5B29DD Rls 02 (Eng/Spa)-SP:30MGJ22

Note 4: PRELUDE/CINPHONY Voice Mail transfer feature supported on Norstar VM 2.1 and above

Note 5: MINUET requires Norstar Voice Mail 3.0 when installed on Norstar Voice Mail NAM or IVR 1.0

Note: Disconnect Supervision is required in all cases.

Norstar MINUET ACD, PRELUDE and CINPHONY Feature Comparisons

Capacities	MINUET ACD	PRELUDE	CINPHONY	
			I	II
Agent Help			√	√
Agents logged in	10	15	30	80
Agent Selection - Longest Idle	√	√	√	√
ANI support		√	√	√
Announcements: Recorded	6	8	16	72
Announcements: Simultaneous (subtract # of channels reserved for Agent Record)	4	**	**	**
Answer Forcing with ZIP Tone	√	√	√	√
Auto Login of Agents (ACDLOGIN.EXE)		√	√	√
Auto Logout of Agents	√	√	√	√
Call Categorization	√		√	√
CLID support		√	√	√
Configured Agents	20	60	120	240
Configured Supervisors	-	-	4	24
Groups	2	3	4	24
Groups Agents Simultaneously logged-in	2	3	4	24
Groups per Supervisor	-	-	4	24
Initial Installed Voice Channels	4	4	4 & 8	12
Language Station Set Support— French and Spanish	√	√	√	√
Lines	15	30	80	120
Maximum Installed Voice Channels	4*	16	16	16
Overflow	√	√	√	√
Overflow Groups	1	1	3	8
Password Protection	√	√	√	√
Priority Queuing			√	√
Real-time Configuration Changes	√	√	√	√

Capacities	MINUET ACD	PRELUDE	CINPHONY	
			I	II
Real-time Group Status Display		√	√	√
Real-time System Status Display		√	√	√
Routing Commands				
Alert			√	√
Announcement	√	√	√	√
Disconnect	√	√	√	√
Distribute	√	√	√	√
Forced Announcement	√	√	√	√
Go to Step	√	√	√	√
Group	√	√	√	√
Increased Priority			√	√
Line Transfer			√	√
Link Transfer			√	√
No Answer	√	√	√	√
Set Priority			√	√
Transfer to	√	√	√	√
Voice Mail transfer	√	√	√	√
Routing Tables per Group	2	2	2	2
Silent Monitor			√	√
Station set or Screen-based programming	Station set	Screen	Screen	Screen
Steps in Routing Table	6 Day, 2 Night	8	16	16
Supervisors per Group	-	-	1	1
Telephone Service Factor (TSF) on Status Display		√	√	√
Wrap	√	√	√	√

* Physical voice channels are provided by the Norstar Applications Module and are used with other applications such as Norstar Voice Mail 3.0 and Norstar Interactive Voice Response.

** Equal to the number of installed voice channels minus the number of channels reserved for "Agent Record".

Standard Reports

Capacities	MINUET ACD	PRELUDE	CINPHONY	
			I	II
Abandoned Call Report		√	√	√
ACD Call Profile Report		√	√	√
Agent Profile Report		√	√	√
Busy Line Report		√	√	√
Call Categorization Report			√	√
Group Profile Report		√	√	√
Historical Reporting		Unlimited	Unlimited	Unlimited
Line Profile Report		√	√	√
Monthly Summary Report		√	√	√
Overflow Report		√	√	√
Report Generation - On-demand		√	√	√
Routing Table Report		√	√	√
Set-based statistics	√*			
System Configuration Report		√	√	√

* MINUET ACD does not support printed reports. However, statistics are displayed on the station set LCD for a rolling 21 periods of time. Switching between Day and Night routing determines a statistical period's beginning and end. At any time users can look at the categories for each of the prior 21 periods. Statistical categories include: number of calls answered, number of calls abandoned, number of calls disconnected, average time to answer, average time to abandon and number of calls per category code.

Optional Feature Packs

Feature	MINUET ACD	PRELUDE	CINPHONY	
			I	II
2500 set Agent support	√*	√	√	√
Agent Profile By Group Report		√	√	√
Agent-Record call			√	√
Agent Selection-Round Robin		√	√	√
Agent Selection-Top Down	√*	√	√	√
Call Categorization by Agent Report			√	√
Data Export			√	√
Delayed Answer (Routing Command)	√*	√	√	√
Destination Number Report			√	√
DID/DNIS Target Line Support			√	√
Emergency Routing			√	√
Line Transfer (Routing Command)		√	√**	√**
Link Transfer (Routing Command)		√	√**	√**
Scheduled Configuration Changes		√	√	√
Scheduled Report Generation		√	√	√

* Norstar MINUET ACD does not have an optional feature pack. Features in this list noted with "√" for MINUET are included as standard features on the system.

** Standard feature.

Options

Add-Ons	MINUET ACD	PRELUDE	CINPHONY	
			I	II
Auto Attendant (Routing Command)		√	√	√
Number of Recorded Announcements w/AA		14	24	96
Number of AA menus		6	8	24
Status Display for Windows™		√	√	√
Wallboard Software Support	√*	√	√	√

* Wallboard Software support is a standard feature on MINUET's core software.

Norstar MINUET ACD, PRELUDE and CINPHONY ACD Feature Descriptions

Unless otherwise specified, the features listed are applicable for all three products.

Agent

An agent is an individual who answers an ACD call. Agents are assigned to a group or multiple groups.

Agent HELP

CINPHONY Levels I and II only.

By pressing a feature key on a Norstar set, an Agent can request Help from the Supervisor while on a call. The name of the Agent will display on the Supervisor's station set.

Agents Logged In

The total number of Agents which can be logged in at one time: Norstar MINUET ACD (10), PRELUDE (15), CINPHONY I (30), and CINPHONY II (80).

A highly trained agent can log into more than one group when appropriate. This helps to effectively utilize multi-skilled agents.

Agent ID

Each individual agent must have an "Agent ID". The call center applications use the agent ID number to login and identify an agent to the system.

Agent Selection—Longest Idle

This call routing method selects the agent who has been available the longest since last handling a call.

Allows you to route calls to agent in such a way that workload is distributed equitably and the wait in queue is minimal.

Agent Selection—Top Down (Preferred)

This is used to send a call to the first available agent closes to the top of the list. The top down method is frequently used when it is desired to send calls to the agent with the most expertise or experience.

The top down method is frequently used when it is desired to send calls to the agent with the most expertise or experience.

ANI: Automatic Number Identification

PRELUDE and CINPHONY only.

ANI is offered by the long distance carrier and provides incoming caller's telephone number. ANI information and appears on the agent's Norstar station set display

when the ACD call arrives.

All three call center applications can route and prioritize calls based on the incoming number.

Announcements

Voice announcements are played to callers to encourage them to hold while they wait for an available agent or to promote products and services.

Voice announcements can be quickly changed at the supervisor's Norstar set, making it easy to create announcements daily or as conditions change.

Announcements: Recorded Announcements

The total number of Recorded Announcements allowed: MINUET (6), PRELUDE (8), CINPHONY I (16), and CINPHONY II (72). An Announcement is played for a caller when it is evoked as a step in a Routing Table using the ANNOUNCEMENT, FORCED ANNOUNCEMENT, or AUTOMATED ATTENDANT Routing Command.

If the Automated Attendant Add-On is being used in PRELUDE or CINPHONY, totals for all levels increase. The Recorded Announcement Configuration screen keeps track of the announcements that were recorded.

Announcements: Simultaneous Announcements

The total number of Recorded Announcements which can be played at one time is in direct relation to the number of Voice Channels which are active.

Answer Forcing with Zip Tone

Answer Forcing applies only to Agents wearing headsets. If Answer Forcing is enabled for an Agent (Agent Configuration screen), a call is automatically sent to an Agent when the Agent is available to take a call. A zip tone precedes the call to let the Agent know that a call is being forced to the headset.

Auto Login of Agents

An external auxiliary application which can be loaded with Norstar PRELUDE and CINPHONY ACD software. This application allows the user to automatically login non-human Agents represented by a device or application (e.g., IVR).

Auto-Logout of Agents

Auto-Logout is a feature that is activated if an available agent does not answer the ACD call within the specified time period. If the time threshold is exceeded, the available agent will be logged out and the call redirected to the next

available agent.

A feature which prevents a no answer situation. It ensures a call is answered by an available agent which leads to improved customer service.

Call Categorization

Norstar MINUET ACD and CINPHONY Levels I and II only. When a call is taken by an Agent, a 2-digit (Norstar MINUET ACD) or a 1 to 12 digit Category Code (CINPHONY) can be entered on the Norstar set during the wrap time after the call is completed. The category code can be required or optional by group, and appears on the Norstar display after an agent completes a call.

Allows a business to determine what types of calls are coming in and organize resources accordingly.

Calling Line Identification Routing (CLID/ANI)

PRELUDE and CINPHONY only.

Incoming CLID is offered by the local telephone company. CLID and ANI Calls coming in on an ACD Line can be routed to a Group by the Originating Number specified.

Can be used to prioritize calls so that specific callers (e.g., company's most important clients) are answered first.

Calls Queued Station Set Display

The total number of calls in queue and time of longest call in queue for a Group. An Agent can view this statistic on the Norstar set while on or off a call. Only the Groups in which the Agent is logged in can be viewed sequentially.

Agent can determine how busy system is and use this information to manage time on calls or determine when to take a break.

Configured Agents

The total number of Agents which can be configured: MINUET (20), PRELUDE (60), CINPHONY I (120), and CINPHONY II (240).

Provides system security.

Configured Supervisors

CINPHONY Levels I and II only.

The total number of Supervisors which can be configured: CINPHONY I (4) and CINPHONY II (24).

Disconnect Supervision

Disconnect Supervision is the change in the transmission of a call when it goes from "off hook" to "on hook" or in other words, when the caller hangs up. The applications use Disconnect Supervision to report on abandoned calls (e.g., when a caller hangs up before an agent

becomes available).

A business can determine how well it is reaching customers and make decisions (such as staffing, hours of operation) according to this information.

Groups

A group is a collection of individual agents qualified to answer a specific type of call. For example, a company may group its agents by Customer Service, Accounts and Billing, Order Desk and Service Installation. This makes a total of 4 groups within the call center. An individual agent can be assigned to many different groups. Also called "Splits" or "Queues." The total number of Groups which can be configured: Norstar MINUET ACD (2), PRELUDE (3), CINPHONY I (4), and CINPHONY II (24).

Provides flexibility to match business needs with personnel.

Groups Agent Simultaneously Logged-in

The total number of Groups into which one Agent can login is in direct relation to the number of Groups which can be configured: Norstar MINUET ACD (2), PRELUDE (3), CINPHONY II (4), and CINPHONY II (24).

A highly trained agent can be logged into any or all groups.

Helps effectively utilize multi-skilled agents.

Groups per Supervisor

CINPHONY Levels I and II only.

The total number of Groups to which a Supervisor can be assigned is in direct relation to the number of Groups which can be configured: CINPHONY I (4) and CINPHONY II (24).

Initial Installed Voice Channels

The number of Voice Channels supplied when the ACD software is first installed: PRELUDE (4), CINPHONY I (4 or 8), CINPHONY II (12).

Language Support

Norstar MINUET ACD systems support English, French and Spanish for Agents from Norstar Station sets. Whatever the telephone is set to, the ACD automatically sends matching messages to that set.

Norstar PRELUDE and CINPHONY ACD systems support English, French and Spanish for Agent and Supervisor functions from Norstar sets. Monitor and Key functions support English and French.

Companies can use the language of their business.

LCD prompted set-based programming

Norstar MINUET ACD only.

Norstar MINUET ACD can be programmed from any M7310 or M7324 station set. The programmer is led through a series

of prompts using the station set soft keys to make selections and the keypad to enter data.

Norstar's superior integration capabilities provide a simple and easy user interface for simplified installation, programming and administration.

Lines

The total number of Lines which can be configured: Norstar MINUET ACD (15), PRELUDE (30), CINPHONY I (80), and CINPHONY II (120).

Maximum Installed Voice Channels

The number of voice channels can be upgraded to a maximum of 4 (MINUET), 16 per level (PRELUDE, CINPHONY I, and CINPHONY II).

Overflow

This feature is useful for expediting call processing and allows calls to be made available to an alternate group other than the one for which the call was originally designated. The maximum number of calls that can wait for the group is specified in administration. Once the threshold is reached, calls are automatically made available to the alternate group in addition to the one for which the call was originally designated. If no agents are available in the second group, Norstar MINUET ACD continues to monitor both groups for an

available agent.

Useful for expediting call processing and expands the agent pool so that more agents are available to answer calls.

Increases number of calls handled, reduces customer hold time and increases agent productivity.

Overflow Groups

Once the Overflow threshold is reached, groups are added to the pool of agents available to take the call. The total number of Overflow Groups which can be selected for the Group where calls are first routed: MINUET (1), PRELUDE (1), CINPHONY I (3), and CINPHONY II (8).

This feature is useful for expediting call processing and expands the agent pool so that more agents are available to answer calls.

Password Protection

Norstar MINUET ACD:

Set-based access to Norstar MINUET ACD is password protected.

CINPHONY and PRELUDE:

The Configuration Menu, Reports Menu, Maintenance Menu, Restart, and Quit can be password protected on the ACD main menu by using a password.

Provides system security.

Priority Queuing

CINPHONY Levels I and II only. This feature allows customers to be

given preferential answering status. Calls are first given to agents based on the call's priority and then its time in queue. If no incoming calls have an assigned priority, the ACD will distribute the longest waiting call. Priorities can be set three different ways:

Group priority assigns a priority to each group. You can place a higher priority on groups whose callers should be handled first, (e.g., new orders versus repeat orders). When a call is transferred to a group, it assumes the priority of the group.

Line Priority assigns each incoming line a priority from 1 (highest priority) to 10 (lowest priority). When a call comes in, it is assigned the priority of its line. Calls on lines with a higher priority will be answered before calls on lines with a lower priority regardless of the lower priority calls time in queue.

This is useful for providing preferred customer with a "special" phone number to ensure they receive the highest level of service. See ANI, CLID, DNIS, DID and Target line.

Routing Command Priority allows a call's priority to change as it spends time in queue. See Routing Command.

Real-time Configuration Changes

Norstar MINUET ACD:

Changes are made, saved, and

updated immediately from the system administration set.

CINPHONY and PRELUDE:

When changes are made and saved on Agent, Group, Supervisor, Emergency Group, or Line Configuration screens, these changes can be updated immediately from the Update Configuration screen.

Allows the system to respond immediately to situations requiring configuration changes such as unexpected heavy call load.

Real-time Group Status Display PRELUDE and CINPHONY only.

The call activity and status of Agents in a single group can be viewed on the Group Status Display screen. The Group Status Displays are color-coded to provide the ability to quickly identify a specific area of interest and the status of Voice Channels also displays in real-time.

The display provides detailed information about a specific group and allows supervisors to identify problems as they occur.

Real-Time System Status Display PRELUDE and CINPHONY.

The call activity and status of all Groups in the System can be viewed on the System Status Display screen. The display shows statistics for eight groups at a time and shows activities such as an agent logging in, or an agent

becoming available for another call, as it happens. The ACD System Status Displays are color-coded to provide the ability to quickly identify a specific area of interest. The status of Voice Channels also displays in real-time.

Allows efficient real-time management of system.

Routing Commands

Routing Commands are specific instructions used in the routing table for determining how to distribute an ACD call. PRELUDE and CINPHONY offer up to 15 different routing commands and Norstar MINUET ACD offers up to 10 different routing commands.

Routing tables allow callers to be routed differently after hours.

Alert: CINPHONY Levels I and II only.

When a call reaches this command in a Routing Table, a ring is sounded at a specified Norstar set to alert a Supervisor or an Agent that a call has reached this alert status. The Alert Routing Command can be entered in a Day and/or Night Routing Table in CINPHONY I and CINPHONY II. When a call reaches an ALERT step, a ring will sound on the specified Norstar set (DN).

Announcement: Plays the assigned prerecorded announcement. If an agent becomes available before the

announcement concludes, the announcement will be interrupted and the call distributed to the agent.

Encourages callers to hold and can be used to advertise products and services.

Delay Answer: Norstar MINUET ACD only. This command instructs the ACD to delay answering incoming calls for a specified time period. The caller hears ringing until the delay passes or an agent becomes available.

Saves 800 number charges when no agents are available.

Disconnect: Ends the call.

Distribute: Searches for an available agent to answer the incoming call.

Allows businesses to customize the time calls are held in queue before an announcement is played.

Forced Announcement: Play an announcement that cannot be interrupted. If an agent becomes available during a forced announcement, the caller will hear the entire announcement before his call is distributed to an agent.

Great for advertising products and services before calls are transferred to agents.

Go to Step: Functions as a loop command. This is used to send a call to different steps within the routing table.

Group: This command sends the call to the other ACD group to follow that group's routing

commands.

Increased Priority: CINPHONY Levels I and II only. Incrementally raises the call's value within the queue so that the call is answered quickly. For example, increase the priority of a call from 5 to 4 after the call has waited in queue for longer the one minute. See Priority Queuing for additional information.

Line Transfer: CINPHONY Levels I and II only. This command transfers a call to an external number by dialing out on a separate trunk and connecting the incoming and outgoing calls. The call can be transferred to a specified Line or Line Pool. The Line Transfer can be entered in a Day and/or Night Routing Table in CINPHONY I, and CINPHONY II.

Link Transfer: CINPHONY Levels I and II only. The Link Transfer Routing Command can be entered in a Day and/or Night Routing Table in CINPHONY I and CINPHONY II. When a call reaches a Link transfer step, the call will be transferred via a flashhook to a phone number outside of the Norstar system. This is normally used on Centrex lines or when the Norstar system is installed behind a PBX. CINPHONY Levels I and II only; available for PRELUDE via Feature Pack Add-On.

No Answer: When this command is the first step of a Routing Table,

the call will continue to ring until the caller hangs up. This is typically used after hours when a business does not wish to incur 800/888 line charges.

Set Priority: CINPHONY Levels I and II only. Establishes the call's priority within the queue. See Priority Queuing for additional information.

Transfer to: Transfers a call to an internal Norstar extension.

Voice Mail Transfer: When a call reaches this command in a Routing Table, the call will be transferred to a specified Norstar Voice Mail or StarTalk voice mailbox. The Voice Mail Transfer command can be entered in a Day and/or Night Routing Table.

See the Optional Feature Pack Add-on section for additional routing commands (Automated Attendant, Delay Answer and Link Transfer).

Allows callers to leave messages rather than wait on hold.

Routing Tables

To distribute incoming calls effectively, the ACD needs a series of instructions. These instructions are found within the routing table.

Routing Tables Per Group

For each Group, a user can specify a Day and a Night Routing Table.

Silent Monitor

CINPHONY Level I and II only.

A Supervisor can use this function

at the Norstar set to monitor an agent's phone conversation without being heard on the line. The supervisor also has the option of joining the call.

This is valuable for monitoring the quality of customer service and for training new agents.

Steps in Routing Table

The total number of Steps (Routing Command entries) which can be configured for the Day and Night Routing Tables: Norstar MINUET ACD (6 for day and 2 for night), PRELUDE (8), CINPHONY I (16), and CINPHONY II (16).

Supervisors Per Group

CINPHONY only. The total number of Supervisors which can be assigned to one Group in CINPHONY I (1) and CINPHONY II (1).

Telephone Service Factor (TSF) on Status Display

PRELUDE and CINPHONY. The TSF is a gauge for measuring the service level of the call center. It is the percentage of calls answered within a Threshold period (in seconds or minutes) for the TSF Interval (in seconds or minutes). For example, a call center may set a goal of answering 80% of all ACD calls within 30 seconds. If the TSF is only 60% at a given time then the call center is short of the TSF goal by 25%. PRELUDE and CINPHONY display the TSF on the real-time group status screen as

well as on the ACD Call Profile Report.

Enables a business to track how efficiently the call center is working.

Voice Channels

All ACD systems use voice channels to play recorded messages and for recording conversations with the Agent Record Call feature.

Wallboard software support

Wallboard support software is included within the MINUET core software. The software allows connection of a wallboard to MINUET to display the following information: group number, number of calls in queue, longest time of a call in queue, number of agents unavailable.

The number of agents unavailable represents the number of agents who have logged in but are currently in one of the following states: manually unavailable, on a non-ACD incoming or outgoing call, or on an intercom call.

Norstar MINUET ACD supports Model 215R from Spectrum Corporation and must be supplied by the distributor or end user.

Wrap

Norstar MINUET ACD

The wrap time is given to agents between answering ACD calls. This allows agents to categorize calls or do paper work between calls. Wrap length is user defined

as between the range of 0–60 seconds. If Forced Categorization is being used, a minimum of 10 seconds Wrap time is required.

PRELUDE and CINPHONY (Automatic, Manual, None)

The Wrap time is the time given to agents between answering ACD calls. This allows agents to categorize calls or do paper work between calls.

It serves to improve customer service as the additional time allows agents to prepare for the next incoming call and ensures that records of the last call are accurate. The 3 ways to specify the length of wrap time include:

- **Automatic:** specified time period (duration) for the wrap time.
- **Manual:** the Agent must enter the Cancel Wrap Feature Code to end wrap time.
- **None:** the Agent becomes available as soon as the call has ended.

It serves to improve employee morale and customer service as the additional time allows agents to prepare for the next incoming call and to ensure that records of the last call are complete.

2500 Analog Station Set

This feature is standard in MINUET ACD and is optional in PRELUDE and CINPHONY. The feature includes support for 2500 telephones, cordless phones and headsets when used in conjunction with an ATA or Analog Station Module.

The 2500 set can be used to perform the following agent functions: Login, Logout, Available, and Unavailable. A Login/Logout DN and Available/Unavailable DN must be configured in system wide administration in MINUET and at the System wide Parameter screen in PRELUDE and CINPHONY.

Allows for alternative types of sets or devices to be used as agent stations.

PRELUDE and CINPHONY Optional Feature Packs

The following features can be added to the standard PRELUDE and CINPHONY features by ordering the Optional Feature Packs. Individual features are not available for purchase separately.

2500 Analog Station Set Support

This includes support for 2500 telephones, cordless phones and headsets. The 2500 set can be used to perform the following Agent functions: Login, Logout, Available, and Unavailable. A Login/Logout DN and Available/Unavailable DN must be configured on a System Wide Parameters screen.

Agent Record Call

CINPHONY Levels I and II only.

While on a call, an Agent can record the call at the Norstar set. Once the call is recorded, the Supervisor can use the Play Call function to play back recording.

Agent Selection - Round Robin

This Method of Selection is used to send a call to the next available Agent listed after the agent who handled the last call.

Agent Selection - Top Down

This Method of Selection is used to send a call to the first available

Agent closest to the top of a list.

The top down method is frequently used when it desired to send calls to the agent with the most expertise or experience.

Data Export

System Data can be exported to a file by date and time ranges. The file is given a .EXP extension and listed in Report/File Maintenance so the user can copy or move the data (file) to floppy disks. This allows call data to be exported to other popular software applications such as Microsoft Word, Access, Excel, Quattro Pro for Windows, Dbase, Lotus 1-2-3 and many more. CINPHONY Levels I and II only.

Allows a business flexibility when tracking and using call center statistics.

Delay Answer: Routing Command

Delays answering incoming calls for a specified time period. The caller hears ringing until the delay passes or an agent becomes

available.

This feature allows the ACD to recognize CLID since the CLID information is normally delivered between the first and second rings, and delays answering a call when no agent is available. This can amount to significant savings on 800/888 line charges.

DID

When a call comes in on a Line designated as a DID, it can be routed to a specific Group. The Destination Number Configuration table enables the user to list these numbers.

DNIS

CINPHONY can route and prioritize calls based on the number the customer dialed. The Destination Number Configuration table enables the user to list these numbers.

A business can improve customer service, e.g., ensure its best customers are given priority or route calls from different regions to a specific group of agents.

Emergency Routing Groups

CINPHONY Levels I and II only.

Emergency Routing allows a single group to handle all calls during an emergency. To activate, the supervisor presses a feature key. Once activated, all calls are rerouted to the emergency group. A call that is directed to the emergency group will follow the group's routing table. The total

number of Emergency Groups which can be configured: CINPHONY I (1) and CINPHONY II (1).

Ensures a call center's calls are answered, even in an emergency situation.

Scheduled Configuration Changes: Routing Command

When changes are made and saved on Agent, Group, Supervisor, Emergency Group, or Line Configuration screens, these changes can be scheduled for update on a specific date and time.

Standard Reports descriptions

Through the REPORTS menu, the Norstar PRELUDE and CINPHONY database can be accessed and management reports can be generated, which help companies understand how agents and the system are performing.

Abandoned Call Report

This report lists and totals calls in which the caller waited on hold and hung up after a certain time period. It details Group, Date, Line, Time, Duration, Incoming Number and Name of each call abandoned during a specified time period. If available, ANI/CLID and DNIS Numbers will be provided.

Allows a business to track how well it is reaching customers.

ACD Call Profile Report

This Report profiles the count or percent of ACD Calls received during a specified time period. The report lists each time period and provides information on how quickly a group is answering ACD calls. It also tracks the number/percent of abandoned calls, calls picked up and disconnected, and calls transferred for each time period.

Allows a business to see how efficiently the call center is working and where improvements (e.g., staffing hours of operation) can be made.

Agent Profile Report

This Report profiles an Agents performance over a specified time period. It tracks the amount of logged-in time, time spent on ACD Calls and how that time was spent, time spent on non-ACD Calls, number of calls answered, and number of times Supervisor help was requested.

Can be used as a time management or training aid.

Busy Line Report

This Report provides the date, time, and duration when all Lines assigned to an ACD Group, are busy.

Allows a business to track how lines are being used and when. This information can be used to make changes.

Call Categorization Report

This Report summarizes the call categorization information for a specified time period. It tracks the number of calls logged for each category. Requires Optional Feature Pack.

Group Profile Report

This Report profiles a Groups

performance for a specified time period. It tracks the number of calls received, whether calls were answered or abandoned, average amount of time a call spent in queue before being answered or abandoned, average time spent on various aspects of ACD Calls, and number of auto-logouts and requests for Supervisor assistance.

Enables management to see how well a specific group is working and whether any changes are required.

Group Overflow Report

This Report summarizes the number of ACD Calls overflowing to other Groups, which Groups received these calls, and the number of calls received by each Group. It also tracks the number of ACD Calls overflowing from other Groups to this Group, and the total number of calls received, answered, and abandoned.

Line Profile Report

This Report summarizes ACD Line Usage. It tracks, by specified time intervals, the number and duration of incoming and outgoing calls, summarize ACD Call activities, and provides a percentage of the interval the line was in use.

Monthly Summary Report

This Report summarizes the entire System or Group performance. It tracks number of calls received, calls answered, calls abandoned, time spent on various aspects of

ACD Calls, number of auto-logouts, Supervisor requests for assistance, and number of incoming, outgoing, and intercom calls during the reporting period.

Routing Table Report

This Report provides the Step number, Routing Command, and value for the day and night Routing Tables. It tracks the number and percentage of all calls reaching each step on the Routing Table.

Enables a business to see how calls are flowing through a call center.

System Configuration Report

This Report provides detailed information of selections made on the PRELUDE and CINPHONY Configuration screens. It is an important analysis tool for system support as well as a reference tool for the user to view system setup.

Reports in the Feature Pack

Report Generation - Scheduled

Current Call Data can be scheduled for processing and reports can be generated on a specified date and time.

Agent Profile by Group Report

This Report profiles an Agents performance by Group(s) for a specified time period. It tracks for each Group the amount of logged-in time, time spent on ACD Calls and how that time was spent, time spent on non-ACD Calls, number of calls answered and number of

times Supervisor help was requested.

Call Categorization by Agent Report

CINPHONY Levels I and II only.

This Report summarizes the call categorization information for a specified time period for each Agent. It tracks the number of calls logged for each category by each Agent.

Destination Number Report

CINPHONY Levels I and II only.

This Report summarizes DNIS and DID usage. It tracks number and average duration of all DNIS and DID calls received during specified intervals, and provides a summary of DID/DNIS Call activities.

Interactive Voice Response

Overview

Interactive Voice Response (IVR) is a telephony system which enables callers to interact with recorded voice prompts using their telephone keypad. When coupled with computer databases and other software applications, IVR is an increasingly popular technology for providing customers with direct access to business transactions via the telephone.

IVR systems can be implemented either on their own or as call center adjuncts. In advanced systems, interaction takes place through speech recognition and Text-to-Speech.

When a call center is fronted with IVR, only those calls requiring human interaction are passed through to ACD thereby reducing agent traffic loads. Call centers report that by implementing IVR, they enable up to 70% of their callers to access information—from airline schedules to subscription status—without any human intervention.

IVR can also be used to handle call overflow situations, so callers can access the information they need without being on hold for long periods of time. It gives each caller control of their own call processing, enabling them to decide whether or not to speak with a live operator.

IVR is convenient for callers, and economically expands a business' hours of operation and geographical serving area. By using an IVR system, customers can access a company's information and systems 24 hours a day, 7 days a week from wherever they may be.

Explosive growth in the telephony applications market, and specifically the IVR market is forecast for the next few years. The chart below shows the forecast growth in shipments of 1 to 16 port IVR systems by vertical industry.

Global IVR System Shipments 1992-2001 1-16 Port IVR Industry Segment Systems

Market Segment	1992	1995	1996	1997	1998	1999	2000	2001	CAGR (1995-2001)
Finance	487	1132	1549	2016	2683	3514	4470	5677	30.8%
Transportation	412	972	1355	1830	2462	3158	4043	5151	32.0%
Utilities	259	705	1005	1372	1851	2664	3568	4558	36.5%
Telco	304	845	1204	1717	2316	3119	4113	5433	36.8%
Education	124	313	428	587	782	1049	1349	1672	32.2%
Publishing	105	260	345	452	619	781	981	1155	23.8%
Retail	192	510	719	993	1357	1766	2292	2889	33.5%
Wholesale	111	292	406	553	751	951	1305	1610	32.9%
Healthcare	143	491	745	1099	1588	2142	2945	3905	41.3%
Insurance	128	318	433	586	779	1001	1247	1544	30.1%
Manufacturing	187	564	833	1155	1674	2383	3130	4083	39.1%
Government	219	576	810	1097	1512	2022	2689	3432	34.6%

Benefits of IVR

The most tangible benefit of IVR is a reduction in the number of calls handled by live representatives. Small to medium enterprises are realizing that IVR can have a significant positive impact on their business, just as it has in large corporations. This, coupled with the fact that ACD and CTI technology is now much more affordable, is fueling the growth in the small to medium sized IVR system market.

IVR provides business benefits by reducing costs and generating additional revenue. Furthermore, it is proven that these technologies allow businesses to retain and grow market share.

Major vertical markets for IVR applications include health care, manufacturing, wholesale, retail and finance. Norstar IVR offers several important benefits to these customers:

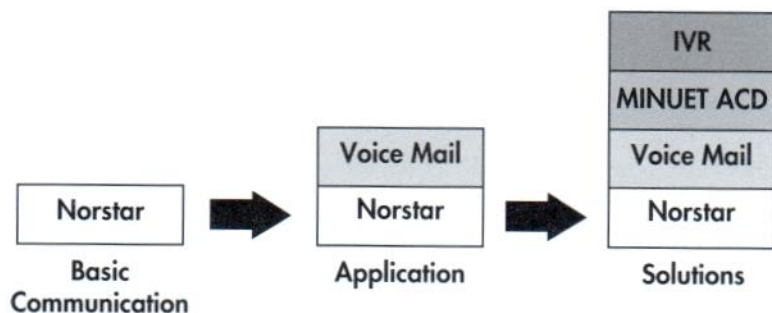
- Reduced operating costs result from the removal of human intervention for routine transactions that can be handled by Norstar IVR. Actual savings are realized through a redeployment of staff, or a cost avoidance by generating additional output from the same staff.

- Increased revenue potential arise from the company's ability to process a greater number of revenue-generating transactions, in one or more of the following ways:
 - extended hours of service, with Norstar IVR available 24 hours per day, 7 days a week. Even when the business is closed, the system can take after hours calls, without the added cost of live agents
 - additional capacity, which makes possible revenue-generating transactions which were not previously practical when handled by live agents
 - additional sources of revenue, through new services offered on a pay-per-use basis
 - increased market share, through improved levels of customer service
- Excellent back up to a busy call center. Callers in a queue no longer hang up, instead, they are off-loaded to Norstar IVR where they conduct their transactions without the need for a live agent.
- Ease of installation, configuration and use. Norstar IVR applications are designed to be easy to install, configure and administer through the standard Norstar display and softkeys.
- Cost-effectiveness. The cost-effectiveness of a customized Norstar IVR application speaks for itself. A tailor-made, industry-specific application translates into improved efficiency, time savings, and both hard and soft dollar benefits.
- Improved time management. Front office staff can now manage their time more effectively, dealing with important, high value transactions that can be conducted only on a personal basis.

Portfolio Positioning

IVR technology, along with message processing and fax, has become an accepted method of automating customer interaction, to either enhance or replace interaction with a live person. Once the exclusive domain of large corporations, IVR technology has recently become a viable option for small to medium-sized businesses. The Norstar product portfolio, aimed at this market segment, is positioned well for the anticipated growth in this area.

Norstar IVR is a high value IVR product tightly integrated with the Norstar system. It is targeted towards the 1 to 16 port size system, and is the first release of an IVR Run Time Engine for Norstar.



Norstar IVR Release 1.0 builds on the successes of Norstar Voice Mail and ACD. As the next step in enhanced applications offered by Nortel, it introduces IVR functionality into the Norstar portfolio. For existing Norstar customers, this technology further advances the Norstar Applications Module as a multi-applications processor that can be configured to deliver value to various horizontal and vertical market segments.

The message of the value of the integration of the Norstar IVR Release 1.0 with Norstar, as well as the voice mail and ACD applications, will be stressed in both Release 1.0 and subsequent releases, as the product evolves. This positioning will ensure continued synergy of ACD and message processing, and assures customers that IVR is a technology that can easily be added as their business needs grow.

Norstar IVR can be positioned as either a prepackaged market application or a customized application. Distributors can choose from two different business models when designing solutions to meet their customers' needs.

How Interactive Voice Response works

Norstar IVR is primarily a software product, which runs on the Norstar Applications Module II (NAM II).

Norstar IVR requires a supervision disconnect core unit, and is compatible with Compact ICS, Modular ICS, as well as 3x8, 6x16 and 8x24 configurations.

Norstar IVR is compatible with core software releases DR5.1 and later, and can be purchased in two variations:

- an upgrade kit with software only (for use with installed base customers), or
- a complete IVR system on a NAM II

An installed base customer, currently running NVM 3.0 on a NAM II, who wishes to install IVR, would have to install the IVR Run Time Engine as well as an IVR application.

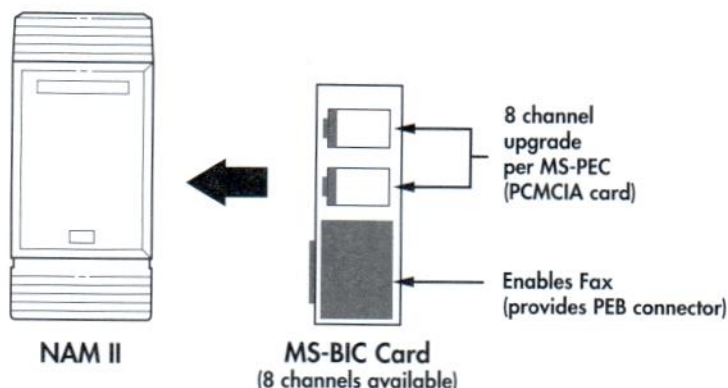
Memory Requirements

As Norstar solutions become more complex and multiple applications are run on a single NAM II, certain limitations to both memory and disk space apply.

All new NAM IIs shipped after September 1997 will be shipped with a minimum of 16MB of memory on-board. New NAM IIs will not be available with less than 16MB of memory.

When completing a quote for a particular customer situation, the Norstar Applications Module Memory Calculator should be used to ensure that sufficient memory is specified (see Chapter 6 for details).

Voice Cards



The NAM II is shipped with the MS-BIC (Media Services Based Interface Card). It has eight channels enabled, each of which can be configured to either be shared between applications or dedicated to a specific application.

Customers using NAM II with Voice Mail 2.0 and DVCs will need to upgrade to Voice Mail 3.0 before they can add IVR. These customers can then run IVR with DVCs. DVCs and MS-BICs cannot be used in the same NAM II.

It is important to note that the existing Digital Voice Card-based systems cannot be converted to MS-BIC systems.

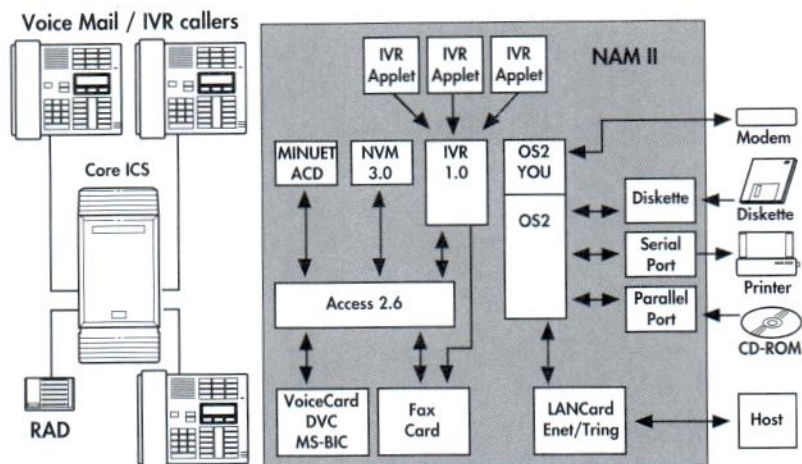
Digital Fax Card

The Digital Fax Card (DFC) can be installed in an ISA expansion slot on the Norstar Applications Module to provide Fax Answering, Fax Overflow, Fax Mail, Fax-On-Demand and Fax Broadcast. The complete package includes a DFC, an MS-BEC, a PEB Data Cable to connect the fax board to the MS-BEC, a Fax Messaging software installation diskette, and supporting documentation.

The Fax option provides two or four channels of Fax. The DFC can be dedicated or shared between multiple IVR applications and NVM 3.0.

Connection to Norstar

This diagram depicts the connection of Norstar IVR to the NAM II and Norstar system. The Voice Card (either a DVC or MS-BIC), optional Fax Card, application software (MINUET ACD, NVM 3.0, IVR Run Time Engine and the IVR application software) all reside on the NAM II.



Applications, including the Run Time Engine and the application software, can be loaded onto the NAM II via CD-ROM, modem or diskette. The NAM II includes two levels of password protection for system security.

Port Sharing and Compatibility with other Applications

Norstar delivers call center solutions by integrating Norstar IVR, MINUET ACD and Norstar Voice Mail 3.0 applications running on the same NAM II. Port sharing between Norstar IVR, Norstar Voice Mail 3.0 and MINUET ACD is possible on the NAM II, and ports can also be shared between more than one IVR application.

Norstar IVR is compatible with Norstar Voice Mail 3.0 and MINUET ACD, and can coexist on the NAM II with these applications. The number of ports to be shared or dedicated to each application can be configured to meet each customer's needs, depending on their call traffic and how they wish to have IVR, ACD and voice mail traffic treated.

It is important to remember that IVR supports a maximum of 16 channels and the MS-BIC card can support a total of 32 voice channels to be shared among all applications.

Customers that currently have Norstar Voice Mail 1.0, 2.0 or 2.1 residing on a NAM II must upgrade to Norstar Voice Mail 3.0 before installing Norstar IVR. In this way, multiple applications can reside on the NAM II, and the customer can avoid having to purchase another NAM.

Software

Norstar IVR software consists of two layers: the IVR Run Time Engine and the application software.

Norstar IVR Run Time Engine

The IVR Run Time Engine is the system enabler, which provides the basic functions required by the IVR application, such as "record voice", "play voice" and "get DTMF input". Examples of telephony functions that might be required are make call, dial number and transfer call.

The Configurator (CFG), a special IVR application, is shipped as part of the IVR Run Time Engine. It provides Norstar IVR with a major competitive advantage over other IVR systems, by allowing the installer or customer to configure a standard application to suit the particular needs of their enterprise by using the Norstar telset (using Feature 930) or Norstar Remote Utilities (Remote Set).

Application Software

The application software is the second building block in the IVR package. It turns the Run Time Engine's functionality into the actual features and capabilities used by the customer.

The application software can be prepackaged or customized. These alternatives are referred to as Business Models 1 and 2.

- Business Model 1, the prepackaged solution, is focused on meeting the end user needs of a mass market. The first prepackaged solution will be an application for the healthcare industry. The target availability date will be 1Q98.
- Business Model 2, the semi-customized and full custom applications, are delivered on NAM II using a Nortel-certified VAD (Value Added Distributor).

The pre-sales support line will be available to support both of these business models, and will provide the details required to build the solution. The custom applications may be developed by Nortel or by a VAD; assistance will be provided by the pre-sales support line to identify the appropriate developer.

IVR Development Toolkit and GUI Toolkit

The IVR Development Toolkit is available to Value Added Distributors to customize IVR applications under Business Model 2 or 3. Value Added Distributors must be certified to receive support services from ITAS in order to deploy solutions onto the Norstar Applications Module.

At a later date, Nortel will sell a Windows-based Graphic User Interface (GUI) toolkit for IVR application development. Not only will this make programming easier and enhance the capabilities of the telephone set as a configuration tool, but it will also provide a price advantage.

Database Support

Norstar IVR supports access to databases, both on board (internal) or external. Access to external databases is done via a LAN, and requires a Network Interface Card (NIC) to be installed in the NAM II. When coupled with NIC cards, Norstar IVR can interface with almost any database, written in almost any programming language.

NIC cards are not sold by Nortel. NIC cards that have been tested and verified to be compatible with the NAM II are detailed in Chapter 6.

Reporting Capabilities

Norstar IVR can produce several key reports, which are accessed by printing to a parallel-attached printer, downloaded to an ASCII text file, or browsed on the telset display. In addition, modem or LAN access can be used to reach out from a remote location and pull reports out of the IVR system.

Reports provide details on program statistics for each application running on the IVR platform; statistics are kept for a rolling 12 month period.

Other available reports include:

- error logs for troubleshooting purposes
- menu logs tracking call flow volumes
- abandoned call log.

Norstar Computer Telephony Integration

Overview



Computer Telephony Integration (CTI) provides companies with the ability to turn a desktop computer into a powerful communications tool that can combine sight, sound, text, animation, video, graphics and other sophisticated telecommunication functions.

While not new, CTI has now come of age with affordable, feature-rich solutions for improving customer service through incoming telephone calls. CTI has been around for many years. The early systems required extensive design and integration activities and, as a result, were limited to large installations that could justify the expense. The dissemination of voice messaging, followed by ACD and IVR, were major milestones in the commercialization of CTI applications. Now, the next phase of CTI deployment, Desktop CTI, has arrived. Gone are the days of expensive

customized applications driven by proprietary links between the telephone system and the computer.

The proprietary nature of the early applications served as a significant deterrent to a faster implementation of CTI. In 1995, a set of industry standards were established (TAPI and TSAPI) and proprietary links gave way to open protocols, a critical milestone for wide-scale development of Desktop CTI.

Norstar is an active participant in the development of technology to evolve telephone systems from voice-only services to multimedia services. There will be an increasingly wide variety of Desktop CTI applications available to take advantage of this integration. Norstar leads the way with Personal Call Manager (PCM), which raises Norstar feature use by working with TAPI SP to give the Windows[®] 95 user a new, PC based, Norstar user interface.

Personal Call Manager

Norstar Personal Call Manager is a TAPI-based telephony application designed for use on the Windows 95[®] operating system. It is optimized for use with the Norstar TAPI Service Provider and raises Norstar feature use to new levels of simplicity and functionality. PCM brings much of the feature rich Norstar user interface to the Windows 95 desktop computer. With PCM, you can access an internal data base directory, double click on a name to dial, conference or transfer calls; all with the ease of a mouse, eliminating the guess work and perceived frustration of using advanced telephone features.



Norstar Personal Call Manager was awarded CTI Magazine's 1997 Editors' Choice Platinum Award

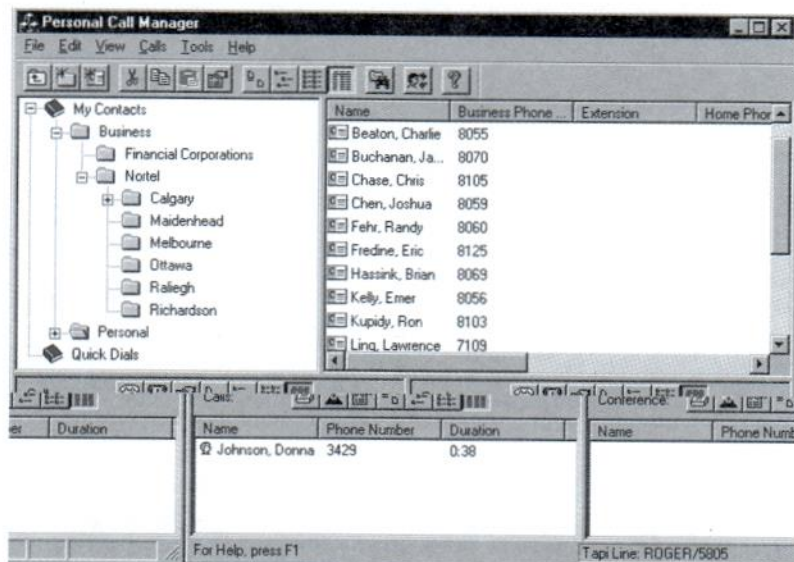
PCM brings you powerful personal call management by effectively uniting the communication ability and reliability of your telephone system with the data resources and point-and-click convenience of your desktop PC. PCM helps knowledge workers save time and will benefit anyone using the telephone to maintain contact with customers or business associates by speeding up call handling. Benefits can result in a substantial payoff in both productivity and improved customer service.

Personal Call Manager allows you to:

- make, answer and return calls
- redial telephone numbers
- put calls on hold
- manage multiple calls
- transfer calls
- conference calls
- call forward your phone
- identify incoming callers through CLID
- activate and de-activate Do Not Disturb

Since PCM is bundled with all of Norstar's CTA product line, it also provides a reference check for functionality of the TAPI desktop. For example, if a customer is encountering a problem with their third party TAPI application, PCM allows the user to quickly determine whether TAPI is functioning correctly by using PCM features.

PCM's innovative call control capabilities could make it the only screen-based telephony application that most people would ever need.



PCM has two main models of operation: operation from the Windows 95® task tray and operation from the main application window. The most common telephony tasks such as dial, hang-up, transfer and conference can be performed from the task tray icon. As well, access to the last callers/called list and quick dials is available from this icon. For more complex telephony operations as well as access to the personal address book, a main application window is provided. The look-and-feel of this window follows the Windows® 95 style guidelines.

System Requirements

The following minimum system requirements must be met by any computer wishing to run the PCM software

- Windows® 95 or greater
- CD-ROM or 3.5" drive (3.5" diskettes can be produced from the PCM CD-ROM)
- 8 MB RAM (16 MB recommended)
- 8 MB free disk space
- 486 DX or greater processor
- TAPI service provider and supporting hardware

Note: PCM requires a Windows® 95 operating system, while TAPI SP's system requirement is Windows® 3.x or greater. Therefore, the TAPI SP can operate on a multitude of Windows® platforms, while the PCM is limited to Windows® 95 environments only.

PCM features

PCM features include:

- Norstar Address Book
 - Customizable hierarchial tree view of contacts
 - List view of contacts in four different styles: large icon, small icon, list and report view
 - Extended information on each contact including business, home and mobile Import/export text files
 - Sound file storage, for example, "Bob calling" in contact record to alert the user through CLID
 - Storage of bit map in contact window
- First Party Call Control
 - Dial
 - Answer/Hold/Unhold
 - Release
 - Conference/Split

- Transfer (blind and announced)
- Call forward
- DND
- CLID
- Call duration
- Last callers/calls log
- Automatic address book search for incoming calls

Target Market for Norstar Desktop CTI

Wherever there is a person working at a desk with a telephone and a computer there is an opportunity to implement a CTI application. There is a wide range of application opportunities across a number of different implementation scenarios. Norstar's Desktop CTI addresses situations from the small Stand Alone Knowledge Worker to globally focused, enhanced call centers.

Traditionally, CTI applications were only found in formal call centers. This was because CTI used to be an expensive and complicated undertaking that could only be cost justified in environments with high call volumes and pronounced strategic and financial importance. But with the fairly recent proliferation of PC and LAN technologies, continually reduced price tags for CTI connectivity, and innovative new off-the-shelf applications, the opportunity for CTI is greatly expanded. The graphical user interface that Windows-based telephony brings to the individual's desktop simplifies the use of the standard tools, (i.e. conferencing, directory dialing, etc.) as well as enhances access to other functions (i.e. FAXing, selective review of voicemail, etc.).

- **Stand Alone Knowledge Workers:**

CTI is now available to almost anyone, simplifying the use of standard tools, (e.g., conferencing, directory dialing) and enhancing access to other functions (e.g., Fax, selective review of voice mail).

- **Call Centers:**

The classic application for Desktop CTI is in Call Centers. The call comes in carrying some form of caller ID. The Norstar strips off the number and sends it to the computer. The computer searches its data file and, based on the information it finds, sends the Norstar instructions on what to do with the call.

- **Formal Call Centers:** in a formal call center, where several people are dedicated to answering similar kinds of telephone calls, Norstar CTI can reduce costs by increasing productivity, (i.e., a smaller staff can accomplish more).
- **Informal Call Centers:** this section of the market is fueling much of the small call center growth. The Informal Call Center also has several people answering similar kinds of calls. These individuals, however, may or may not be dedicated to answering incoming calls. They may be part-time agents and perform other duties within the business.

Desktop CTI Benefits to Customers

The CTI revolution has brought the benefits of computer-telephony integration to a wider range of users – from the call center to the individual desktop. There is a broader selection of lower cost, shrink-wrapped solutions available and they are very competitively priced. The implementation of these solutions is quicker, easier, and less costly.

There is improved application interworking across hybrid networks which means customers can now pick a single solution across an entire enterprise network.

Norstar's support of CTI offers several benefits to our customers:

- **New Applications Solutions**
 - Customers can leverage the power of TAPI/TSAPI applications such as Personal Call Manager, Symposium FastCall and Symposium Call Manager, along with other Nortel distributed Symposium Partners' applications.
- **Investment Protection**
 - Nortel and Norstar will continue to support development of TAPI/TSAPI standards. Customers can be assured that their investments in TAPI/TSAPI will have long-term evolution commitments.
- **Purchase Flexibility**
 - A TAPI/TSAPI-compliant application—whether off-the-shelf or custom—will be supported by Norstar's Service Provider software. Productivity is maximized as more vendors incorporate TAPI/TSAPI functions in their applications.
- **Cost-effective CTI Solutions**
 - Robust CTI solutions based on these standards can be implemented at a fraction of the cost of custom applications—redefining business for maximum profitability with the power of CTI.

Increasing the number of new communications applications, calling traffic and access to enhanced services like voice mail, ACD and IVR will continue to fuel growth in the CTI market.

Desktop CTI Benefits to End Users

- Employee Satisfaction
 - easier access to phone features
 - elimination of repetitive tasks
 - reduced errors in dialing
- Reduced Expenses
 - reduced 800 line charges
 - reduced employee training
 - eliminated need to customize software
 - applications easily modified to meet specific business requirements
 - increased productivity
- Customer Satisfaction
 - faster call handling
 - more accurate call handling
 - personalized answering
 - less time on the phone
- Increase Revenue
 - more orders per hour
 - more return business
 - faster order processing
 - new opportunities for outbound telemarketing applications
- Competitive Differentiation
 - customers receive more personalized attention

Norstar and Desktop CTI

Norstar Desktop CTI combines the Norstar portfolio with the power of desktop computing. Turnkey enabler and applications software packages are available directly from Nortel and now run on DR-5 or later Norstar systems.

TAPI and TSAPI are the two industry standards for Applications Programming Interfaces (APIs).

Desktop CTI Functions

Desktop CTI applications address an extensive number of different applications in a variety of horizontal and vertical markets. The generic functions are:

Screen Based Telephony

Telephone calls can be set up from a screen and keyboard, and call progress can be written onto the screen. Traditional telephone features are now easily accessed through a PC interface.

Screen Pops

Uses incoming call information to select the most relevant data from the associated computer for display on the recipient's screen. Examples of the types of information are:

- Calling line identification
- Calling line location
- Incoming trunk number
- Dialed number
- Previous answer points
- Public or private status
- Queuing time

Intelligent Routing

Incoming and outgoing calls can be routed based on a multitude of decision rules. Examples of the types of information are:

- Time of day
- Current activities of people in different departments
- Information about the incoming call
- The route taken by the previous calls

Voice and Data Call Association

As an example of voice/data association, an active call is being handled by an agent whose responsibility is to sell insurance policies. As the call progresses, relevant files are opened, data concerning the caller is displayed, and new data about the caller is entered. Then a problem arises, the caller has a question that the agent is unable to explain. The call is transferred to a specialist and the data follows the call. The specialist has all the necessary information to carry on the transaction, (the caller is not required to repeat the request). Employee satisfaction is enhanced (increased productivity, access to additional information resources). Productivity is increased, costs are reduced, (more customers are served, less employee time, 800 line charges).

Data Transport

The link between the computer and the telephone system can be used to transport data, via DTMF tones. Thus, there are application scenarios that use the telephone keypad as an input device to computer applications.

Coordinated Call Monitoring

CTI can collect combined information on what has transpired between the computer and telephone systems and process this data into meaningful reports that cross reference agent activity. These reports can flag business opportunities from the perspective of revenue increases and/or cost reductions.

The following table presents these most relevant CTI-generic functions against the identified benefit categories:

Benefit Category	Cost Savings	Increased Revenue	Employee Satisfaction	Competitive Differentiation	Customer Satisfaction
Benefit Class	Tactical	Tactical	Tactical	Strategic	Strategic
Screen Based Telephony	√		√	√	
Screen Pops	√	√	√	√	√
Intelligent Routing	√	√	√	√	√
Voice and Data Call Association	√		√		√
Data Transport	√			√	√
Coordinated Call Monitoring	√	√		√	

Norstar TAPI implementation

TAPI Definition

The Microsoft standard for the desktop environment is the Telephony Application Programming Interface (TAPI). TAPI allows a Windows application to operate on many different switch platforms with little or no modification. In order to support TAPI, Nortel is providing the Service Provider (SP) drivers for the Norstar. The SP is a software layer that resides between the TAPI application and the Norstar system. This TAPI SP adds new value to the Norstar by enabling the operation of Windows® telephony applications.

Norstar TAPI enables desktop telephony, that is, applications that control one telephone. This is often referred to as "First Party Call Control". In this scenario, it is the PC and telephone on a particular desktop that are tied together via the hardware connectivity.

A TAPI application such as a "Personal Call Manager" runs on the users desktop computer (TAPI compatible Windows® environments), drawing on and issuing telephony commands from that position.

Installation is relatively simple and can be completed by individuals familiar with Windows® applications.

Note: Norstar TAPI previously used the TelAdaptor and the PCIB-TAPI card. Now TAPI uses products from the Computer Telephony Adapter family to connect to Norstar.

There are four different options when ordering TAPI service for the Norstar system:

- TAPI Service Provider, Personal Call Manager software bundled with the CTA 100 connectivity device
- TAPI Service Provider, Personal Call Manager software bundled with the CTA 150i connectivity device
- TAPI Service Provider only (this enabling software allows the desired application to interoperate with Norstar)
- Personal Call Manager software only

Note: TAPI Service Provider and Personal Call Manager software are also available with the CTA 500dm.

TAPI System Requirements

You must have the following minimum hardware requirements to use Norstar TAPI SP:

- 386/33 MHz PC, EISA, or ISA bus
- 3.5" disk drive
- 450 Kbytes of free memory (RAM)
- 820 Kbytes of free disk space for Norstar TAPI SP files
- mouse (optional, but highly recommended for installation)
- VGA or SVGA display
- one of the members of the CTA interface device family

You must have the following minimum software requirements to use Norstar TAPI SP:

- MS-DOS 5.0 or later and either Microsoft Windows[®] 3.1 or Windows[®] for Workgroups 3.1 or later

OR

- Windows[®] 95

Norstar Computer Telephony Adaptor

The Norstar Computer Telephony Adapter (CTA) products are positioned as a comprehensive and simple method of installing industry standard TAPI connectivity on the Norstar system. The product family includes an upgrading capability and supports both basic and more advanced customer applications. The CTA products replace the existing TelAdaptor, PCI-B TAPI and Norlink products.

All CTA products come equipped with the TAPI SP Norstar Personal Call Manager software application.

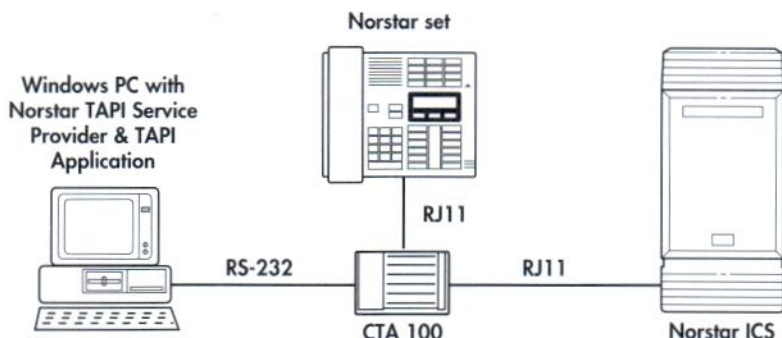
The primary purpose is to connect the computer to the phone. In short, these connectivity devices are the actual hardware devices that sit between the computer and the phone. The TAPI SP software is loaded directly on the computer to complete the TAPI integration. PCM provides the screen-based telephony application that enables the end user to activate certain features of Norstar, using the graphical user interface and the mouse of the Windows[®] 95 PC.

CTA 100

The CTA 100 is an easily installed TAPI connectivity device that replaces the TelAdaptor and provides basic D-channel TAPI connectivity via an RS-232 serial port.

The CTA 100 connects the 7000 series Norstar telephone to a Windows[®] PC via a RS-232 serial port. This set up provides D-channel connectivity which is required to support a wide selection of TAPI applications such as Personal Call Manager, Symposium, Symposium Partners and Business Affiliates solutions. Like the TelAdaptor it is a physical hardware device, located at a specific desktop, where a Windows[®] based PC is linked to a Norstar set. The CTA 100 is recommended for any CTI user who wants Call Control and support of industry standard TAPI applications.

The following illustration shows the connection of CTA 100 to a Norstar ICS and a Norstar set. The CTA 100 is connected to a local PC through an RS-232 connection. The RS-232 connection provides serial connectivity to the local PC via a 9-pin connector.



Since the CTA 100 provides TAPI connectivity, Norstar customers will be able to enhance the communication value of their Norstar system by using a wide variety of Nortel or third party applications. This product is well suited to customers looking to translate the benefits of CTI to their businesses by increasing the rate of CTI deployment on the Norstar system. This device is also the ideal product to simulate a customer trial of Desktop CTI.

The CTA 100 package includes:

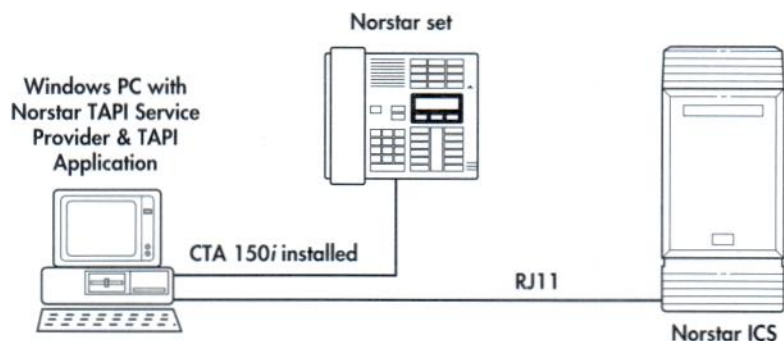
- CTA 100 device
- Norstar TAPI service provider
- Personal Call Manager
- Adobe Acrobat Reader (included on TAPI diskettes and PCM CD)
- Power supply and all necessary cables

CTA 150i

The CTA 150i provides a direct interface linking the desktop PC to the Norstar system and telephone set by insertion into an industry standard ISA slot in the PC. You should use the CTA 150i if a RS-232 port on a PC is unavailable. The CTA 150i performs the same functions as the CTA 100.

The CTA 150i was actually an integral part of the first generation of Norstar TAPI enablers. It was formally called the PCIB-TAPI. The CTA 150i is the same physical device, bundled with the Personal Call Manager application. Moving forward, the CTA 150i will remain in the portfolio to address the market need for an alternative to the RS-232 method of connecting to the PC.

The CTA 150i is an excellent alternative for customers who prefer the aesthetics of an internal solution and for anyone that does not have an available serial port on their PC.



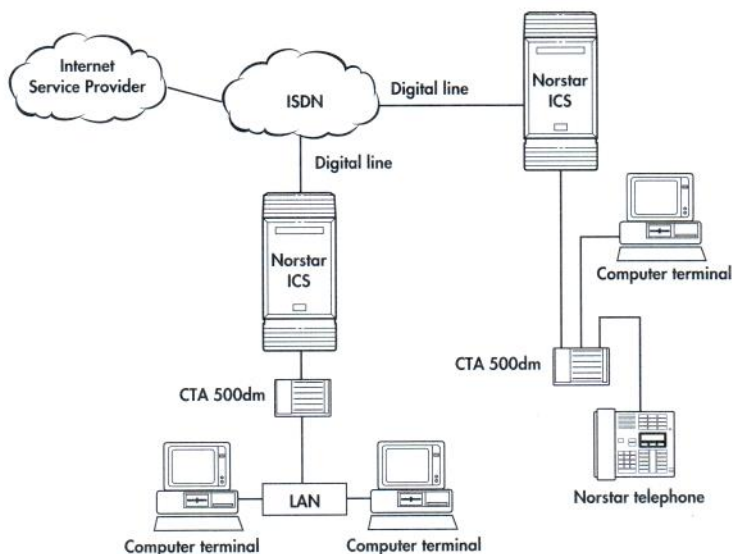
The CTA 150i package includes:

- CTA 150i device
- Norstar TAPI service provider
- Personal Call Manager
- Adobe Acrobat Reader (included on TAPI diskettes and PCM CD)
- All necessary cables

CTA 500dm

The CTA 500dm is designed for the CTI user requiring the increased bandwidth of ISDN-BRI in conjunction with the benefits of desktop CTI. This truly integrated solution provides the flexibility and benefits previously only possible by deploying multiple pieces of hardware and software on the desktop.

The CTA 500dm provides reliable high speed end to end digital connectivity between a computer and a remote data server, through the Norstar ICS and the public ISDN network. The CTA 500dm supports Point-to-Point protocol (PPP) and Multi-link PPP (MP), which are widely used in applications such as Internet access and remote LAN access.



A Norstar telephone can also be connected to the CTA 500dm to access Norstar voice services. You can simultaneously carry on a conversation while your computer is connected to the Internet or remote LAN, with no loss of ICS features. The CTA 500dm connects to the ICS using standard telephone cabling.

Multi-link PPP (MP) works with intelligent bandwidth management software, in the ICS, to provide dynamic bandwidth allocation. When the attached Norstar telephone is not in use, excess bandwidth can be reallocated for data traffic (up to 128 kbps). If you use the telephone, 64 kbps service is

automatically reallocated for the conversation and the data connection continues at 64 kbps. When you hang up the telephone the extra bandwidth is automatically reallocated to the data connection.

In addition, some of the ICS resources (such as network access lines and calling line features) normally used for voice applications can be used for data traffic. Network access lines can be shared between CTA 500dms and the other traffic within the system. Features such as call logging, call restriction and routing based on time of day can be applied to data traffic for facility utilization and management.

In summary, the CTA 500dm offers:

- a modem replacement option, using PPP, MP
- high speed network rate (56, 64, 112, 128 kbps)
- high speed serial port (maximum 115.2 kbps)
- integrated desktop solutions (Norstar set, PPP/MP data version, CTI)
- bonding of two 56/64 kbps channels using MP
- dynamic bandwidth allocation between voice and data sessions
- data transfer via 3.4 khz audio call type in ISDN
- password authentication protocol support
- Hayes command dialing
- delivery of CLID
- in-field software upgrade for feature enhancement

The CTA 500dm package includes:

- CTA 500dm device
- Norstar TAPI service provider
- Personal Call Manager
- Adobe Acrobat Reader
- documentation
- Installation Wizard for Windows[®] 95

The following scenarios highlight the capabilities of CTA 500dm :

- A Norstar user equipped with a CTA 500dm at the desktop is in the process of accessing the Internet using his ISDN BRI at 115 kbps.
- The Norstar user receives a call to his Norstar telephone.

- The Norstar set rings and his CTI screen pop application presents the callers file information based on the incoming callers number; Internet access is unaffected and continues at 115 kbps.
- The Norstar user answers his telephone. 64 kbps is allocated to his voice call, and Internet access continues at 64 kbps.
- The Norstar user hangs up. Internet access automatically returns to 115 kbps.

Norstar TAPI Components

Components for Norstar TAPI implementation are described in the following chart:

Component	Detail	Source
User's PC	Windows® PC: 386 with 4 MB RAM with VGA or greater. Windows® 3.1, 3.11 (Windows® for Work Groups) or Windows® 95. Minimum hard drive requirements for individual TAPI applications may vary. Consult TAPI application user guides for specific requirements.	User supplied
The application	Application must be TAPI compliant. Runs on the user's desktop computer.	TAPI applications available from Nortel. (For example, Personal Call Manager.) Also available from 3rd party vendors or from Nortel's Symposium, Symposium Partners or Business Affiliates.
Microsoft TAPI software	Allows a PC application to talk to a telephone system.	Built into Windows® 95 or Bundled with the TAPI applications Also available for Windows® 3.1 or Windows® 3.11.

Component	Detail	Source
Norstar TAPI Service Provider (SP)	Enabling software that allows the desired application to inter-operate with the Norstar. Installs on the user's desktop PC.	Purchased from Nortel, bundled with the required Computer Telephony Adapter. Also available as software only for upgrades. Installation is relatively simple and can be completed by individuals familiar with Windows® applications.
CTA 100	A small plastic module which provides the RS-232 serial interface linking the desktop PC to the Norstar system and the telset.	Bundled with the Norstar TAPI Service Provider and PCM software from Nortel. Package includes all cables and the power supply.
CTA 150i	Card which provides a direct interface linking the desktop PC to the Norstar system and the telset. Fits into industry standard (ISA) 8 bit slot of the PC.	Bundled with the Norstar TAPI Service Provider and PCM from Nortel. Package includes all cables. Does not require a power supply.
CTA 500dm	A small plastic module which provides reliable high speed end to end digital connectivity between a computer and a remote data server, through the Norstar ICS and the public ISDN network	Bundled with the Norstar TAPI Service Provider and PCM from Nortel. Package includes all cables. Does not require a power supply.
Norstar Telephones	M7100, M7208, M7310, M7324	Purchased from Nortel.
Norstar Core Unit	Must be a North American model Norstar DR5 or above: Norstar 3X8, Compact 6X16 and Modular 8X24 DR5 Modular ICS R1/T1; XC-USA-1.0; XC-CDA-1.0 and higher Compact ICS 1.0 and higher	Purchased from Nortel.

When to use the CTA 100

- simple installation - just plug in the cables and install the software
- no need to open the PC
- ideal for self-installation by the end user
- ideal for sales demos using portable laptop computers
- low risk of software conflicts since the CTA 100 users COM1 or COM2 software interrupts, which are standard

When to use the CTA 150i

- more secure installation since it is not easily removed from the PC
- does not require additional AC power, since it draws power off the backplane of the PC
- has no footprint, i.e. does not require space on the desktop

The following matrix will allow you to choose the optimal solution that is right for each end user.

	CTA 150i	CTA 100*	CTA 500dm
Connectivity	PC ISA Bus card	RS-232 external peripheral	RS-232 external peripheral
TAPI support	√	√	√
Applications support	Basic	Basic	Advanced
Uses Norstar wiring	√	√	√
Plug and Play		√	√
Field upgrades			√
Serial port required		√	√
External power supply		√	√

* Replaces TelAdaptor

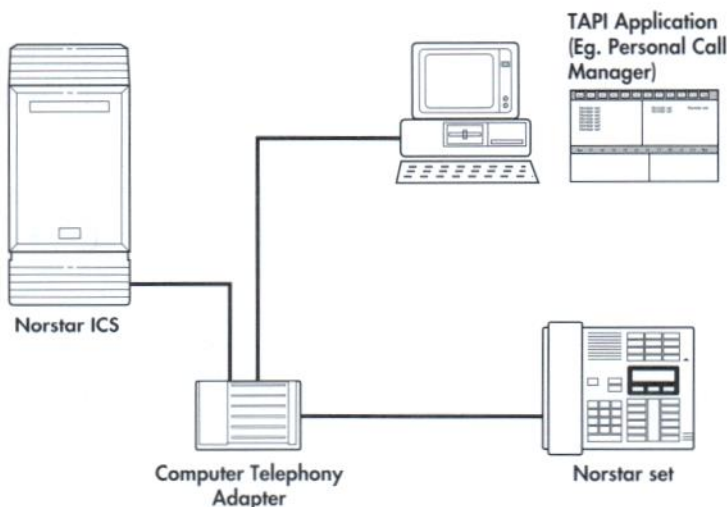
TAPI Application Examples

With the introduction of the Computer Telephony Adapter product line, Norstar customers can now enjoy the many benefits offered by CTI. The Norstar CTA 100, CTA 150i and CTA 500dm can provide a wide array of business solutions that can fit into many existing LAN, client/server or stand alone PC environments.

The following illustrations summarize several TAPI implementations that utilize the Norstar TAPI Service Provider and the CTA connectivity devices on a Windows 3.1 or Windows 95 desktop PC

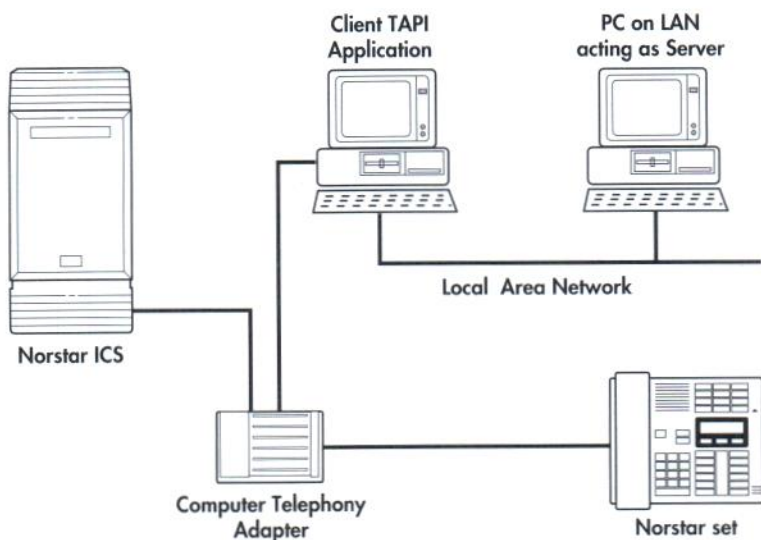
Individual Desktop Productivity

The following illustration shows an individual desktop productivity solution utilizing Personal Call Manager or any one of a growing number of Nortel and other off-the-shelf TAPI applications. In this configuration, the individual user has full control and administration of the application. Typical customers would include any knowledge worker with a PC and Norstar telephone on their desktop who want to better manage their telephone contacts and features or any customer that is currently using an off-the-shelf TAPI compliant application.



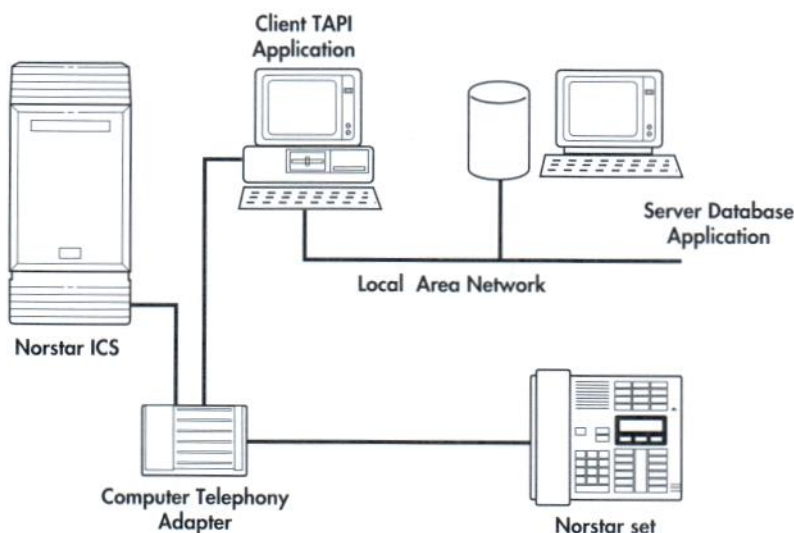
Desktop Productivity - LAN Environment

The following illustration highlights a desktop productivity solution installed in an existing LAN environment. This scenario utilizes TAPI to introduce additional telephony functionality to an existing or new information retrieval application. Typically, a group of users who want to share contact information or other customer data would be ideal beneficiaries of a TAPI equipped Norstar desktop.



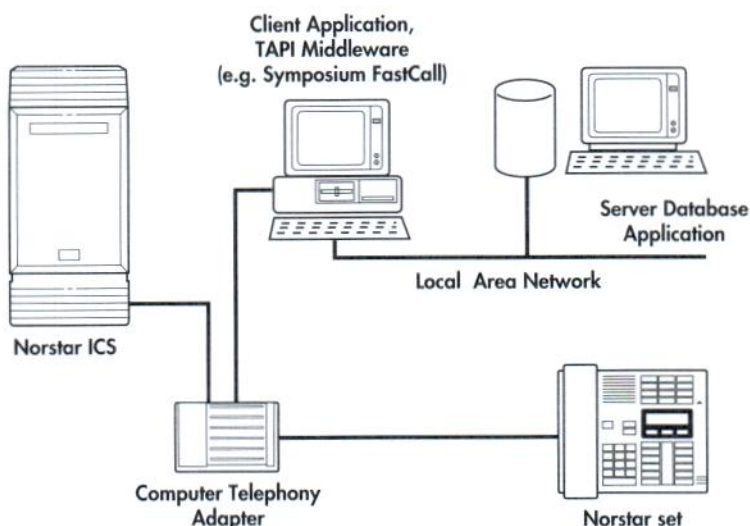
Desktop Productivity - Client/Server LAN Configuration

The following illustration shows a desktop productivity solution in a client/server LAN configuration. In this case, the addition of TAPI would bring powerful telephony integration into an existing server database shared by a group of users. For example, a TAPI solution could allow agents to increase customer service, handle a greater number of calls while gaining a competitive edge in the marketplace.



Existing Database Client Software and TAPI Middleware

The following illustration shows how TAPI adds value to an exiting client/server database. In this case, the use of a TAPI middleware application such as Nortel Symposium FastCall or Symposium Partners Clearwave Intellect-Plus, would allow contact information to be delivered to the agent desktop through recognition of Calling Line ID. The use of these off-the-shelf TAPI middleware applications makes implementation easy and integrates telephony into an existing server database configuration.



Norstar TSAPI implementation

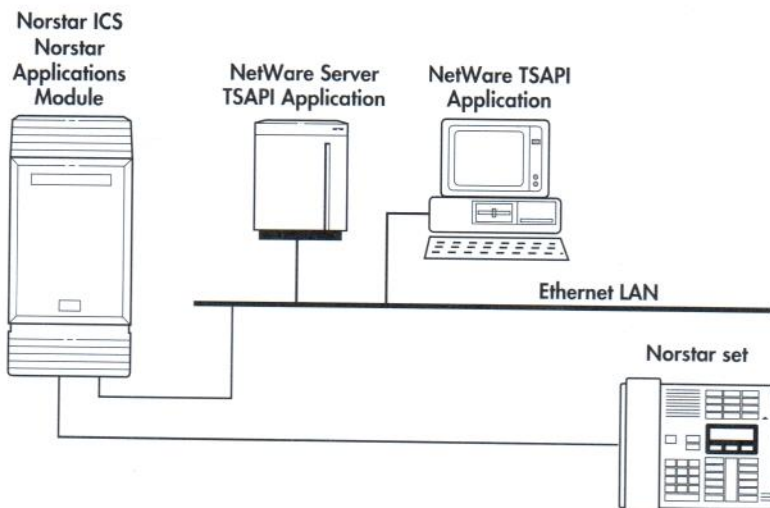
TSAPI Definition

The Novell standard for the LAN environment is the NetWare Telephony Services Application Programming Interface (TSAPI) which consists of software that runs on a NetWare server and on a Windows client PC. TSAPI is a set of C language routines that support telephony control capabilities for a generic switch environment. Applications running either on the Server or PC can use the TSAPI to monitor and control calls at a device associated with the user.

TSAPI enables LAN based telephony; applications that control the telephone switch via a server on the LAN. This is referred to as "Third Party Call Control". In this scenario, it is a server on the LAN that is linked to the telephone switch that enables the transfer of information between the telephone and the computer.

The NetWare Telephony Services will be connected to an ICS via a LAN to the Norstar Voice Mail platform or a Norstar ACCESS server (Applications Module).

TSAPI applications run in a Novell LAN environment and reside on a server. The scope and extent of the required software and hardware is more complex than TAPI.



Norstar Server-based Integration (TSAPI): With server based integration, the physical connection is between the Norstar and a LAN-based server that has multiple users or clients. The telephony information passes through the Norstar, across an intelligent interface or CTI link, to the server, then across the LAN to the desktops. Telephony commands return through this link to the Norstar.

The telephone is physically connected to the switch with integration to the user's PC provided via the switch-server interface, (e.g., Norstar Applications Module). The user's desktop does not require any connectors, PC circuit packs, or new wiring.

Sample TSAPI Call

The client's PC initiates the call using a screen-based telephony TSAPI application. (For example, the user double clicks on a name in their directory to initiate a call.)

The following steps describe how TSAPI would process the call.

Step 1: The request from the application is sent over the LAN (Local Area Network) to the Telephony Server (T-Server) software located on the NetWare Server.

Step 2: The Telephony Server passes the request to the Norstar NLM (Netware Loadable Module) software, also located on the NetWare Server.

Step 3: The Norstar NLM translates the request, then passes the request over the LAN to the TSAPI software on the Norstar Applications Module.

Step 4: Norstar executes the request (i.e. the associated terminal goes off hook).

The scenario is reversed if the call is initiated by the Norstar.

TSAPI System Requirements

- Novell's T-Server software (including site licenses)
- ACCESS Server software (Nortel provided)
- LAN connectivity software (Nortel provided)
- LAN cards
- Norstar Telephony services NLM (Nortel provided)
- Norstar Applications Module (Nortel provided)

TSAPI installation requires a skilled technician.

Norstar TSAPI Components

Note: It is expected that TSAPI telephony application users will have a Novell LAN in place and a LAN administrator. Installation of a LAN requires a skilled technician.

Requirements for TSAPI to integrate with the Norstar:

Purchased from an Authorized Gold or Platinum Novell Dealer:

- Novell's T-Server software (including site licenses)

Purchased from Nortel:

- Norstar TSAPI software (includes Norstar Novell Telephony Services NLM software)
- Norstar Applications Module*
- Connectivity device to the Norstar core unit*

— * Systems with Norstar Voice Mail:

If the system has Norstar Voice Mail 2.0 or higher, then the only requirement is for the Norstar TSAPI software and the Norstar NLM. Here the Voice Mail platform, which is a Norstar Applications Module, serves as the platform that supports the Norstar ACCESS software and the TSAPI Mapper software. The MS-BIC and/or Digital Voice Card (DVC) that links the Voice Mail platform to the Norstar core unit serves as the connectivity device.

— * Systems without Norstar Voice Mail:

If the system does not have Norstar Voice Mail 2.0 or higher, then there is a choice of using the Norstar Applications Module as the TSAPI Server platform or employing an alternate OS/2 platform (i.e. a third party OS/2 PC). A PCIB card serves as the connectivity device.

Choosing TAPI or TSAPI

The following points summarize the implementation differences between TAPI and TSAPI.

- Application functionality is the same for both.
- Functionality is essentially the same for callers or users (agents).
- The primary differences are in the way each protocol is implemented. Especially in:
 - hardware connectivity
 - support structure
 - implementation procedures.
- There is no charge from Microsoft for TAPI; there is a per desktop charge for TSAPI from Novell.
- TSAPI supports non-Windows[®] clients.

The choice between TAPI and TSAPI is influenced by a number of parameters such as cost, administration and maintenance issues and/or specific applications. It is not necessarily the function or the existence of a LAN. TAPI can work in a LAN environment as well.

The choice between TAPI and TSAPI should be evaluated by the customer based on market conditions, cost, client workstation vendor and specific application requirements.

Norstar TAPI and TSAPI Compatibility

- Norstar 3X8 DR-5
- Compact 6X16 DR-5
- Modular 8X24 DR-5
- Modular ICS R1/T1 or higher
- Modular ICS XC - CDA - 1.0 and USA - 1.0 or higher
- Compact ICS 1.0 or higher

Note: There are no specific configuration requirements to support TAPI or TSAPI applications on a Norstar system.

Nortel Symposium Program

The Nortel Symposium Program offers a single point of contact for comprehensive CTI solutions through the existing Nortel authorized distributor network.

The program offers a wide variety of innovative, complementary Symposium applications and support including:

- Symposium Call Center brings new power to customer relationship management, offering advanced skillset routing, total call tracking, CTI and Internet capabilities. Other Call Center applications include IVR, Fast View, and Remote Agent.
- Symposium Desktop Applications are powerful multimedia communications tools for businesses, and include:
 - Symposium Multimedia Messaging which provides quick access to fax, e-mail and voice messages in a single computer window
 - Symposium Multimedia Conferencing, a versatile multimedia application for interactive collaboration with others through video conferencing, document sharing, whiteboarding, application sharing, and high speed file transfer.
- Symposium Multimedia Toolkits, which include application development tools and APIs, backed by expert developer support services.
- Symposium Professional Services works with Nortel authorized distributors to design and implement CTI solutions.

Nortel Symposium Partners Program

Businesses continually look for new ways to gain a competitive edge and improve the delivery of customer services. But with so many choices available on the market today, you're challenged to ensure compatibility and keep your options open. The Nortel Symposium Partners Program exists to help you find the best multimedia and power network solutions for your customers.

Nortel already has alliances with over 300 software developers and systems integrators to work with us through the Business Affiliate Program to develop applications which complement Nortel switching platforms. Nortel now takes the relationship with a select few of those companies to the next level.

Through the Nortel Symposium Partners Program, Nortel is entering into marketing agreements with selected multimedia application developers. Symposium Partners Products will provide new capabilities for specific industry segments and enhance Nortel's portfolio in the areas of call center, IVR, CTI, and Telecommuting. This broadened portfolio of products will further improve Nortel distributors' ability to offer "one-stop shopping" for complete multimedia communications and power network solutions.

Nortel carefully selects third-party products developed by members of the Business Affiliate Program and chooses those that provide features and capabilities which Nortel believes are strategic to the marketplace. Nortel performs verification testing to ensure the product is compatible with the Norstar portfolio of switching products. Working closely with the potential Symposium Partners Program vendor, Nortel ensures their processes and support services will meet the needs of Nortel's distributors. After these product compatibility and support requirements are assured, the product is accepted as a Symposium Partners Product.

For more information, call:

U.S. 1 - 800 - 684 - 4782

Canada 1 - 800 - 638 - 9303

Norstar CTI and the Nortel Business Affiliate Program

The Nortel Business Affiliate Program is designed to provide technical and marketing support to companies who work closely with Nortel customers and distributors in delivering Computer Telephone Integrated (CTI) solutions. Affiliate companies include software application developers, value-added resellers of CTI applications, and system integrators that specialize in voice, video communications, and telephony application technologies, as well as organizations that want to develop private applications to work with Nortel equipment. With all suppliers (computer manufacturer, telecommunications supplier, and application software developer) of an integrated computer telephony solution working together, the customer receives a smooth implementation, prompt problem solving, and the best-in-class solution for their business needs.

For more information, contact:

Business Affiliate Program
Northern Telecom
200 Athens Way, MS: 601C
Nashville, TN 37228-1397
Voice: 615-734-4284 Fax: 615-734-4179
Business_Affiliates@nortel.com
<http://www.nortel.com>

Nortel and CTI

In 1987, Nortel was the first manufacturer to support open Application Programming Interfaces (APIs) with DEC's Computer Integrated Telephony, and has since added IBM CallPath, Tandem CAM, HP ACT, and more. The Norstar ACCESS Tool kit, introduced in 1991, allowed Developers to design new and enhanced telephony solutions for Norstar customers. Currently there are over 250 Developers participating in our Business Affiliate Program.

Norstar supports Microsoft's TAPI and Novell's TSAPI. The support of both TAPI and TSAPI, as well as a broad range of other computer-based applications, will spur the development and availability of new CTI applications to meet growing customer demands.

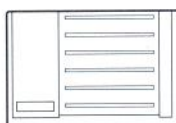
In 1994, members of the Norstar team joined others in Nortel and computer industry leaders including Microsoft, Compaq and Intel to jointly define a new computer peripheral standard called Universal Serial Bus. Two of USB's key goals are to simplify the end user installation experience and to provide a high bandwidth enabler for CTI applications. Members of the Norstar R&D team were key in defining how this new standard would enable new CTI applications and has subsequently co-authored the Communication Device Class specification for USB.

Nortel is committed to providing multimedia applications which integrate the computer and telephony technologies. Nortel equipment and associated application enablers also provide a rich platform for independent development of CTI applications.

Norstar Remote Administration



Personal Computer



Remote Access Device

Introduction

Norstar Manager was developed and introduced to the North American market in 1992 to provide an effective remote programming, administration, and maintenance tool for Norstar systems. It was specifically designed as an operational business tool to enable channels and end customers to provide superior service levels and cost effective support of their Norstar systems. Service improvement opportunities came from benefits which included:

- reduction in customer site visits for service and maintenance
- faster handling of service requests
- centralization of technical expertise and system data
- more effective and timely service delivery.

The initial version of Norstar Manager was supplied in an MS-DOS format. As the PC market evolved, Norstar Manager was migrated to a Windows™ platform and enhanced as the new generation of Norstar products were introduced.

To further expand Norstar's remote administration capabilities, Norstar Remote Utilities (NRU) was introduced in August 1996. Effective with this release, the Norstar Manager software was no longer sold as a stand-alone product but made available through the Norstar Remote Utilities offering. This package bundled Norstar Manager 3.2 software with the Remote Set Software.

Continuing the evolution, the NRU 4.0 release, available in the first quarter of 1998, brings together Norstar Manager 3.4 software and the Norstar Remote Tools 2.0 in a single package. Norstar Manager 3.4 software provides all the features and benefits of previous Norstar Manager releases and the Norstar Remote Tools software provides the Remote Set Tool as well as a Backup and Restore tool and a Browser tool.

All versions of the Norstar Manager and Norstar Remote Utilities software use a PC to perform much of the programming required for new installations, adds, moves, changes and maintenance support on Norstar systems.

These software applications are installed on a PC located at a remote location or at the phone system site and communicate through a Remote Access Device (RAD). The RAD, connected to a station port on the target Norstar system, uses its built in modem to provide a communications interface between the Norstar system and the remote application software loaded on the PC. The RAD can auto-answer an existing line on the Norstar system or calls can be manually transferred to the RAD by an on-site operator. In remote connections, a separate connection device must be used by the PC to communicate with the RAD.

Note: A commercially available Hayes compatible modem capable of operating at 1200 or 2400 baud is recommended.

Product Evolution

Norstar Manager

Norstar Manager was initially introduced to provide a way to remotely program and administer Norstar systems via a DOS based PC. Users were given the option to program their system in on-line or off-line modes.

Norstar Manager for WindowsTM Version 1 & 2

The Norstar Manager for WindowsTM software incorporated a Windows-based user interface that worked through a series of screens and menus. This allowed users to navigate the system more easily and view or make changes to the programming of the Norstar system. The software also included a communications interface which controlled communications with customer sites and a report generator which allowed customization of the systems reports.

In addition to the capabilities of Norstar Manager, Norstar Manager for WindowsTM offered:

- Remote Feature Administration Enhancements
- Enhanced Report Printing
- Key Label Printing

Norstar Manager for WindowsTM 3.1

Version 3.1 supported all the features of versions 1 and 2. In addition, the removal of Off-Line programming allowed for performance improvements as high as 50%.

The following enhancements were also made:

- Designed to enable superior service and cost effect support of Modular ICS XL and XC systems
- Administration of Norstar voice mail systems
- Administration of Nortel Companion mobility option.

The RAD on Norstar Manger Release 3.1 provided translation and processing of Norstar administration commands, and automatic detection and reporting of Modular ICS XL and XC alarms.

Norstar Remote Utilities

The first version of Norstar Remote Utilities (NRU) introduced the expansion of Norstar's remote administration portfolio. NRU 1.0 consisted of three components: **Norstar Manager 3.2 software**, **Remote Set Software (RSS)**, and documentation.

Norstar Remote Utilities was bundled to include all three components, but the user had the option of installing both Norstar Manager 3.2 and the Norstar Remote Set Software or only the RSS.

Norstar Remote Utilities retained all of the previous functionality of Norstar Manager 3.1 and had the following enhancements:

- Alternative options for Norstar system database administration
- Administration of Norstar Compact ICS database
- Improved installed base administration coverage
- Selectable installation of Remote Administration Software
- Bundled packaging of alternative administrative software.

The **Norstar Manager** component of NRU 1.0 (Norstar Manager 3.2) had the same features and functionality as Norstar Manager 3.1, with screens and menus which allow the user to navigate through the different areas of Norstar Manager 3.2 and easily view and/or change Norstar information and programming. As well, it provided the same full diagnostic capabilities and full data recovery with the Backup & Restore functionality.

A new feature of Norstar Manager 3.2 is the application launcher, which provides access to the new RSS from within the Norstar Manager 3.2 application.

The launcher provides the user with two connection options:

- Remote Set Online Session - launches Remote Set using connection details from the customer database.
- Remote Set Quick Connect - launches Remote Set using connection details provided by the user through a dialog box.

When launched from Norstar Manager 3.2, the RSS goes directly to the set simulation screen. After launching RSS, the Norstar Manager 3.2 application is disabled. Exiting from this window drops the RSS connection and returns the user to the Norstar Manager 3.2 customer database window.

Note: RSS and Norstar Manager 3.2 cannot be operational at the same time.

Preview—Norstar Remote Utilities 4.0

Norstar Remote Utilities (NRU) 4.0, available in the first quarter of 1998, continues the evolution by offering an enhanced toolkit called Norstar Remote Tools. NRU 4.0 is a software package consisting of 3 components:

1. **Norstar Manager 3.4 software**
2. **Norstar Remote Tools 2.0**
3. Documentation.

Norstar Remote Utilities is bundled to include the above offerings, but a user has the option of installing both Norstar Manager 3.4 and Norstar Remote Tools 2.0 or only the Norstar Remote Tools 2.0 software. If the user has no need for backup/restore, diagnostics, reporting, or system inventory information, they can choose to install only the Norstar Remote Tools functionality, giving them fast effective programming and administration access only.

Norstar Remote Utilities will retain all of the previous functionality of NRU and has the following enhancements:

- a new, faster Backup and Restore tool for Compact ICS 2.0 and Modular ICS 2.0
- a Browser tool which allows the user to make program changes using an expanded view of ICS programming.

Features and Benefits of Norstar Remote Administration Software

The following pages describe the primary features and benefits common to all versions of Norstar's remote administration software:

Remote System Programming Speeds Installation, Lowers Installation Costs

Whether installing a new system or a system upgrade, PC-based applications reduce the time traditionally needed to enter Norstar system data through an on-site telephone set. Instead, programming takes place at a centrally located PC, then is downloaded to the Norstar system immediately, or as scheduled.

Programming time can be reduced as much as 50%. Field technicians no longer have to be trained software programmers. Programming is completed in a central location while field staff use their time and expertise for the physical installation of equipment.

Remote Moves, Adds, Changes Reduces Costs, Speeds Service

Most moves, adds and changes can be performed from the central PC, eliminating site visits for these requests. This not only lowers the cost of such services, it also reduces the time needed to deliver them.

Centralizing adds, moves and changes also gives the service facility control over the Norstar system's configuration programming so it's always up to date.

Remote Troubleshooting

Reduces On-site
Visits, Speeds
Problem Resolution

Norstar Manager provides your customer with a window on all their Norstar systems. When a Norstar system reports a problem, Norstar Manager finds the source before a repair crew makes a trip to the site. In many cases, the problem can be fixed by Norstar Manager, saving time and expense of a service call.

This remote troubleshooting capability reduces site repair visits by at least 30% leading to significant cost savings. When an automatic alarm notification of a problem is received from a user, the problem can be accessed through a modem and the Norstar system's RAD. The Norstar's system parameters are checked and the software performs a single diagnostic test. If necessary, faults can be checked for in the system and in the wiring between the system and the telephone sets.

Note: Cold restarts, the equivalent of startup from an on-site set, are not supported by any of the software versions. The system will recognize this command within the first 15 minutes after initial power up and is not required for remote administration and maintenance activities.

On-Line Programming

Reduces Installation
Costs, Increases
Programming
Flexibility

On-line programming provides the same real time access to Norstar systems that on-site system administrators have. It lets the user call a remote Norstar system and perform all the functions that an installer or system administrator would normally perform using one of the system's on-site Norstar telephones.

Some of the functions that can be viewed in an on-line session include:

- button assignments on all sets
- call processing status of sets (Busy/Idle, Call Forward, Do Not Disturb)
- set levels for display contrast, ringing volume, ring type, language, etc.
- complete Norstar programming for system, line and set parameters

- system inventory that gives a summary of what equipment is attached to the Norstar system.

Note: Off-line programming was removed with Norstar Manager for Windows™ 3.1 in order to improve system performance. For those customers wishing to utilize the Off-line programming feature of the earlier Windows releases, Rls 3.1 or 3.2 can be co-installed with version 1.0 or 2.0.

Task Scheduling allows the administrator to schedule programming activities to be performed at specific times. Some of the activities that can be scheduled include:

- sending pre-programmed site information to a Norstar system to update the system programming or to restore programming after a data loss
- retrieving site information from the Norstar system programming to maintain a current backup record
- regular checkups or polls to selected Norstar systems to insure the communications link is operational.

Centralized System Database Increases Marketing Opportunities

A current inventory of every Norstar system's installed equipment can be provided creating a central database for sales and marketing. For instance, a check of the inventory would reveal which systems have StarTalk Flash or Norstar Voice Mail voice messaging and which don't, indicating who should receive sales calls.

The inventory information provides these details:

- system type
- design release of the system hardware and software
- station and trunk modules
- sets or terminals attached to the system.

Enhanced Maintenance Database

Increases Revenue

Two special, enhanced maintenance features are provided that can be included as revenue generating options to maintenance contracts.

The first is Alarm Monitoring. With this feature, the RAD—the communications link between Norstar and the application PC—will recognize alarm messages. The RAD will then automatically dial up to two pre-programmed numbers and send an alarm message back to the applications at the service facility.

Note: All system alarms can still be generated with the new RAD, with the exception of the “Total KSU Failure” alarm.

The second is Backup and Restore. This maintains a Norstar system’s most recent programming for fast and complete restoration —without an on-site visit—in case system programming is lost. Current version does not support this.

Both features enhance the benefits of remote administration by assuring any system problems will be recognized and resolved quickly and completely.

Security Protects System Integrity

Two levels of security are provided - site security and operations security.

With site security, each Norstar installation accessed by Norstar Manager is assigned its own site ID. The site IDs are checked to insure each is unique and used by only one site. Communication between Norstar Manager software and the Norstar system RAD will not be allowed until the proper site ID is presented to the RAD at the initial stages of the call setup.

With operations security, each person allowed access to Norstar Manager must have a user ID and password. Further security is provided by the proprietary communications protocol between the RAD and Norstar Manager.

**Printing and
Report Generation**

Increases Flexibility
of Record Keeping

Users can print a report which provides a hard copy of all information available to them. The report includes all information for all lines, sets, restrictions, overrides, etc. The report is easy to read and serves as a permanent record of system programming data. Sections of the report may be printed as needed.

Norstar Manager (DOS-based) reports cannot be customized, however, users do have access to the data structure of Norstar Manager system programming data files and the customer database. With this, they can write their own applications that access this data and generate reports in the format they desire. Reports can be saved to a file, and a text editor or word processing package can then be used to modify or customize reports. Norstar Manager for Windows™ can customize reports and print key cap labels.

Planned Features and Benefits of Norstar Remote Utilities 4.0

NRU 4.0 introduces the user to the Norstar Remote Tools 2.0 software. This powerful toolkit allows the user to use Norstar Manager and the Remote Set Software available in the previous release of NRU, as well as the faster Backup and Restore tool, and a Browser tool.

Unlike the previous release of NRU, Remote Tools can be accessed while you are in a Norstar Manager session.

You can use Norstar Manager and Remote Tools independently, or you can launch Remote Tools from the File menu of Norstar Manager. The Remote Tools window uses the connection settings for the current customer as they are stored in the Norstar Manager database.

Remote Tools no longer uses the connection profiles used in Remote Utilities 1.0 and 2.0. You can set connection preferences which can be used with any Remote Tool.

Norstar Manager 3.4

The differences between Norstar Manager 3.4 and Norstar Manager 3.2 lie in the installation process and the method of running Norstar Remote Tools from Norstar Manager.

NRU 4.0 software will be available on multiple 3.5" disks or a CD ROM. When you install Remote Utilities 4.0, you have the option of installing Norstar Manager at the same time as Norstar Remote Tools. You do not need to install Norstar Manager to use Remote Tools.

Installation will be done using InstallShield® wizard. It guides you through the installation process which you can cancel and return to at any time. Norstar Remote Utilities is designed to be fully compatible with Windows 3.1® and Windows® 95. An uninstall function is included for both Norstar Manager and Remote Tools.

Installation creates a NRU program group which contains icons for:

- Remote Tools
- Remote Tools help
- Norstar Manager and Norstar Manager error messages (if you have chosen to install Norstar Manager)

- Uninstall programs.

Norstar Remote Tools 2.0

The Norstar Remote Tools 2.0 software package consists of three tools:

- Remote Set, a part of the previous releases of NRU
- a new faster Backup and Restore tool for CICS 2.0 and MICS 2.0
- a Browser tool which allows you to make program changes using an expanded view of ICS programming.

You can use the new, faster Backup and Restore tool and the Browser tool with Norstar Compact ICS 2.0 and Modular ICS 2.0 only. The Remote Set tool can be used with any previous release of Norstar software, except Compact and Modular DR 1.

Remote Tools works through a series of windows and menus which allow you to navigate through the different areas of the application and easily enter information and programming.

Remote Set tool

The Remote Set tool is a fast, effective, and easy to use remote administration tool that provides Windows™ based capabilities for configuring, administering, and maintaining Norstar systems and peripherals. Once an on-line connection is established, the Remote Set tool simulates either an M7310 or M7324 set. The simulated Norstar set consists of keys and text displays and provides the interface from which the user can perform the same programming or set activity that can be administered from a normal on-site extension.

Remote Set tool provides the following capabilities:

- MMI that simulates a Norstar set of the desired type when programming
- Remote configuration, administration, and maintenance functions for most Norstar system types and software
- Ability to remotely program Voice Mail features except those requiring voice capability
- Ability to remotely program Station Message Detail Recording (SMDR), Door Phone and other peripherals that use the telephone for programming
- Remote programming of all Norstar peripherals
- Remote administration of the Remote Access Devices (RAD and I-RAD)

- On-line programming of the ICS core unit with simulated M7310 and M7324 extension types
- Direct queries of device status
- Access to Feature **DEBUG sessions
- Copying of extensions and lines within a system.

Backup and Restore tool

The Backup and Restore tool can be used with Compact ICS 2.0 and Modular ICS 2.0 systems only. The Backup and Restore tool retrieves a complete copy of all programming information, or selected programming information, from the ICS and stores it, usually on your PC hard drive.

You can use this new method when you:

- install a new Norstar system
- are offering to backup customer programming as a service
- make significant changes to the programming of an ICS.

You can also use the Backup and Restore tool with Norstar Manager. When you first use Backup and Restore with the ICS, a directory for the system is automatically created under the Norstar Manager directory.

Browser tool

The Browser tool allows you to view and change the programming for the Norstar Modular ICS and Compact ICS running software version 2.0 or higher.

The tool is installed on your PC in the NRU program group. You use the Remote Tools window to start the Browser tool and establish a connection with the ICS.

Similar to the Remote Set tool, the Browser tool lets you see and make changes to the ICS programming using an on-line connection. Instead of simulating the telephone display, the Browser tool shows the multiple levels of the programming tree (Tree List). You can use the Browser tool to:

- show and hide headings, subheadings and settings by expanding and collapsing the levels of the Tree List
- "open" a heading to see additional settings
- change settings by selecting options and entering information

- change settings by adding or removing items from lists
- use a dialog box to copy settings
- see programming upgrades taking effect by refreshing Tree List.

Norstar Remote Administration Products Compatibility with Norstar System Software

The following chart shows the compatibility of all versions of Norstar's remote administration products with Norstar system software:

	Norstar Manager Rls 1.0, 2.0, 3.0 & 3.1	NRU 1.0		NRU 2.0		NRU 4.0 ¹	
		Norstar Mgr 3.2	Remote Set ²	Norstar Mgr 3.3	Remote Set ²	Norstar Mgr 3.4	Remote Tools ^{2,7}
Norstar 3x8 DR1	No	No	No	No	No	No	No
Norstar 3x8 DR5	Yes	Yes	Yes	Yes	Yes	Yes ³	Yes ⁵
Norstar 3x8 DR5.1	Yes ⁴	Yes ⁴	Yes	Yes ⁴	Yes	Yes ³	Yes ⁵
Compact 6x16 DR1	No	No	No	No	No	No	No
Compact 6x16 DR2 ⁶	No	No	Yes	No	Yes	No	Yes ⁵
Compact 6x16 DR5	Yes	Yes	Yes	Yes	Yes	Yes ³	Yes ⁵
Compact 6x16 DR5-DS	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁵
Compact 6x16 DR5.1	Yes ⁴	Yes ⁴	Yes	Yes ⁴	Yes	Yes	Yes ⁵
Compact 6x16 DR5.1-DS	Yes ⁴	Yes ⁴	Yes	Yes ⁴	Yes	Yes	Yes ⁵
Modular 8x24 DR1	No	No	No	No	No	No	No
Modular 8x24 DR2 ⁶	No	No	Yes	No	Yes	No	Yes ⁵
Modular 8x24 DR3 ⁶	No	No	Yes	No	Yes	No	Yes ⁵
Modular 8x24 DR3 CTX ⁶	No	No	Yes	No	Yes	No	Yes ⁵
Modular 8x24 DR4	No	No	Yes	No	Yes	No	Yes ⁵
Modular 8x24 DR5	Yes	Yes	Yes	Yes	Yes	Yes ³	Yes
Modular 8x24 DR5 CTX (DR CTX+)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Modular 8x24 DR5.1	Yes ⁴	Yes ⁴	Yes	Yes ⁴	Yes	Yes	Yes
Modular ICS Rls1 T1 (also NA R1T1)	Yes ⁸	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS Rls1 CTX (also NA R1 CTX)	Yes ⁸	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS CDA XC 1.0	Yes ⁹	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS USA XL 1.0	Yes ⁹	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS USA XC 1.0	Yes ¹⁰	Yes	Yes	Yes	Yes	Yes	Yes

	Norstar Manager Rls 1.0, 2.0, 3.0 & 3.1	NRU 1.0		NRU 2.0		NRU 4.0 ¹	
		Norstar Mgr 3.2	Remote Set ²	Norstar Mgr 3.3	Remote Set ²	Norstar Mgr 3.4	Remote Tools ^{2,7}
Modular ICS NA DR 1.1 (replaces NA R1T1)	No	No	Yes	Yes	Yes	Yes	Yes ⁵
Modular ICS CDA XC 1.1	No	No	Yes	Yes	Yes	Yes	Yes ⁵
Modular ICS USA XC 1.1	No	No	Yes	Yes	Yes	Yes	Yes ⁵
Modular ICS NA DR 2.0	No	No	Yes	No	Yes	No	Yes
Modular ICS CDA XC 2.0	No	No	Yes	No	Yes	No	Yes
Modular ICS USA XC 2.0	No	No	Yes	No	Yes	No	Yes
Compact ICS 1.0	No	No	Yes	No	Yes	No	Yes ⁵
Compact ICS 2.0	No	No	Yes	No	Yes	No	Yes

Note 1: Available in 1998. NRU 4.0 Remote Tools includes: Remote Set, Backup & Restore, and Browser.

Note 2: Requires RAD2 or Fast RAD. FastRAD provides faster performance, particularly when working with Remote Tools such as Backup&Restore.

Note 3: Software purchased after July 1, 1993

Note 4: Can administer DR5 features only. Cannot administer features added with DR 5.1.

Note 5: Remote Set only.

Note 6: Compatible with DOS version of Norstar Manager, using RAD, RAD2 or FastRAD.

Note 7: NRU 4.0 Remote Tools includes: Remote Set, Backup & Restore, and Browser.

Note 8: Except Norstar Manager Rls 1.0.

Note 9: Except Norstar Manager Rls 1.0 and 2.0.

Note 10: Except Norstar Manager Rls 1.0, 2.0 and 3.0.

Norstar Remote Access Device Compatibility with Norstar System Software

	Remote Access Device		
	RAD ¹	RAD 2 ^{2,3}	FastRAD ²
Norstar 3x8 DR1	No	No	No
Norstar 3x8 DR5	Yes	Yes	Yes
Norstar 3x8 DR5.1	Yes	Yes	Yes
Compact 6x16 DR1	No	No	No
Compact 6x16 DR2	Yes	Yes	Yes
Compact 6x16 DR5	Yes	Yes	Yes
Compact 6x16 DR5 DS	Yes	Yes	Yes
Compact 6x16 DR5.1	Yes	Yes	Yes
Compact 6x16 DR5.1 DS	Yes	Yes	Yes
Modular 8x24 DR1	No	No	No
Modular 8x24 DR2	Yes	Yes	Yes
Modular 8x24 DR3	Yes	Yes	Yes
Modular 8x24 DR3 CTX	Yes	Yes	Yes
Modular 8x24 DR4	No	Yes	Yes
Modular 8x24 DR5	Yes	Yes	Yes
Modular 8x24 DR5 CTX (DR CTX+)	Yes	Yes	Yes
Modular 8x24 DR5.1	Yes	Yes	Yes
Modular ICS RIs 1 T1 (also NA R1T1)	Yes	Yes	Yes
Modular ICS RIs 1 CTX (also NA R1 CTX)	Yes	Yes	Yes
Modular ICS CDA XC 1.0	Yes	Yes	Yes
Modular ICS USA XL 1.0	Yes	Yes	Yes
Modular ICS USA XC 1.0	Yes	Yes	Yes
Modular ICS NA DR 1.1	Yes ⁴	Yes	Yes
Modular ICS CDA XC1.1	Yes ⁴	Yes	Yes
Modular ICS USA XC1.1	Yes ⁴	Yes	Yes
Modular ICS NA DR 2.0	No	Yes ⁵	Yes ⁵
Modular ICS CDA XC 2.0	No	Yes ⁵	Yes ⁵

	Remote Access Device		
	RAD ¹	RAD 2 ^{2,3}	FastRAD ²
Modular ICS USA XC 2.0	No	Yes ⁵	Yes ⁵
Compact ICS 1.0	No	Yes	Yes
Compact ICS 2.0	No	Yes	Yes

Note 1: RAD is compatible with all Norstar Manager but not Remote Set or Remote Tools.

Note 2: RAD 2 and FastRAD are compatible with Norstar Manager, and Remote Tools (which includes Remote Set). FastRAD provides faster performance, particularly when working with Remote Tools such as Backup&Restore.

Note 3: RAD manufactured April 1996 or later.

Note 4: Norstar Manager 3.3 and later.

Note 5: Remote Set and Remote Tools only.

Note: Norstar Manager 3.4 is compatible with all versions of RAD except Norstar Compact ICS's internal RAD (IRAD). Norstar Remote Tools 2.0 is only compatible with Norstar Compact ICS's IRAD and Norstar system software provisioned with the new RAD (available since March 30, 1996).

Feature Comparison Chart

	Norstar Manager for Windows® Rls 1.0, 2.0, 3.0 & 3.1	NRU		NRU 4.0	
		Norstar Manager for Windows® Rls 3.2 & 3.3	Remote Set Software Rls 1.0 & 2.0	Norstar Manager for Widows® Rls 3.4	Remote Tools Software
Computer Hardware Platform					
IBM compatible 80386 20-25, (MHz processor or higher)	✓	✓	✓	✓	✓
4 megabytes of RAM					
8 megabytes of RAM	✓	✓	✓	✓	✓
Computer Software Platform					
MS-DOS 3.31 or higher					
MS-DOS 5.0	✓	✓	✓	✓	✓
Windows 3.1	✓	✓	✓	✓	✓
Windows 95				✓	✓
Alarm Monitoring	✓	✓		✓	
Backup and Restore	✓	✓		✓	
• Automatic Backup	✓	✓		✓	
• Partial Backup	✓	✓		✓	
Centralized System Database	✓	✓		✓	
Automatic Database Update	✓ Rls 1 and 2				
Initial System Programming					
On-line	✓	✓	✓	✓	✓
Off-line	✓ Rls 1 and 2				
Maintenance	✓	✓	✓	✓	✓
Moves/Adds/Changes	✓	✓	✓	✓	✓
Remote Feature Administration	✓	✓	✓	✓	✓
Mouse/Scroll/Choice Lists	✓	✓	✓	✓	✓
RSS Launcher		✓		✓	
Reporting					
Standard	✓	✓		✓	
Custom	✓	✓		✓	
Prints key cap labels	✓	✓		✓	
Troubleshooting	✓	✓	✓	✓	✓

Norstar Remote Utilities 4.0 Accessory Compatibility

Norstar Remote Utilities administers all Norstar terminals, the Analog Terminal Adapter, Norstar voice messaging systems, Companion and the RAD. It can "see" but not administer these add-ons:

- PCI Card
- NorLink
- SMDR
- Doorphone.

Norstar Remote Utilities 4.0 Hardware and Software Specifications

Hardware

- a 486 or higher
- 8 MB RAM memory
- MS-DOS 5.0 or later
- 400+ kilobytes of conventional memory available in Windows®
- a hard disk (minimum 100 MB free)
- VGA color monitor
- a 1.44 MB 3.5 inch floppy drive
- if you have ordered Norstar Remote Utilities on compact disc, you need a CD-ROM drive to install the program
- Microsoft® Windows® 3.1, Windows® for Workgroups 3.11, or Windows® 95
- a Windows® compatible mouse
- a Hayes-compatible internal or external modem
- 1 serial port (required for direct connection to RAD).

Norstar Remote Utilities will run on a laptop provided that it is equipped with the above hardware configuration. A 100 MB hard drive is recommended. For improved speed and to accommodate future application enhancements, an IBM 486 PC or compatible with 8 MB of RAM and 160 MB hard drive is recommended when running the NRU program.

Norstar Remote Utilities can be used on-site with Norstar systems if the PC is equipped with RS-232 serial communications port. In this case, a modem is not required. However, a Norstar RAD must be attached to a station port on each Norstar system to allow communications between the PC and individual Norstar. The RAD acts as a modem and communications interface to the internal Norstar messaging system.

Software

Norstar Remote Utilities software is delivered on multiple 3.25" disks or CD.

Site License Agreement

A new Norstar Remote Utilities Site License Agreement is now available to assist large distributors or major accounts in managing their internal and external configurations. This option allows for a reduction in operational costs, creates new service revenue opportunities, and enhances a distributor's image and competitiveness as a responsive service provider making use of leading edge technology.

Option 1 - Single User includes:

- 1 non-reproducible copy of software and documentation
- Licensed for a single user and single PC.

Option 2 - Multi-User includes:

- 10 non-reproducible copies of software and documentation
- Licensed for 10 specific sites/PCs
- Free upgrades provided based on terms of agreement which is re-negotiable annually
- Maintenance fee available for extension of agreement
- Substantially reduced pricing over single site purchase.

Option 3 - Authorized Copier includes:

- 1 copy of software and documentation
- Software only is reproducible (unlimited quantities)
- Documentation may be ordered separately (separate CPC number)
- Licensed for an unlimited number of sites/PCs
- Free upgrades provided based on terms of agreement which is re-negotiable annually
- Maintenance fee available for extension of agreement
- Substantially reduced pricing over single or multi-user purchases.

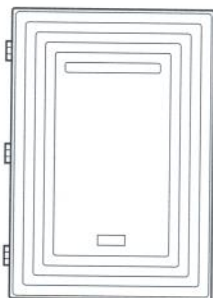
Appendix A: Legacy products

The Norstar Compact 6X16 and Modular 8X24 products have been Manufacture Discontinued and replaced with the Norstar ICS products. The new ICS core platforms support the features and applications demanded by today's highly competitive business market.

In order to take advantage of the many new and evolving applications available for Norstar, it is highly recommended that customers upgrade to the Norstar ICS product portfolio.

Norstar Compact 6X16 Key Service Unit

Compact 6X16 KSU



Length: 516 mm (20.3 in)
Width: 356 mm (14 in)
Depth: 87 mm (3.4 in)
Weight: 5.15 kg (11.41 lb)
Color: Dolphin Grey

- The Compact (6X16) system is a self-contained unit.
- The system can be configured with up to six lines and sixteen stations.
- It has one emergency transfer teledapt port and an internal power supply.
- The software cartridge includes all administration and call processing features required to operate a Norstar Compact system.
- The Compact requires a CII-C6 for CMS/CLASS functionality (see Peripherals for detail).
- Two versions of Compact are:
 - 6X16 (Releases DR1, DR2 and DR5) and
 - 6X16 DS with Disconnect Supervision (Release DR5-DS).
The 6X16 software is not compatible with 6X16 DS system and the 6X16 DS software is not compatible with the 6X16 system.

Note: The Compact 6X16 was market retired effective February 20, 1997.

Norstar Compact 6X16 Software Features

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new feature

Compact 6x16 Features	DR1	DR2	DR5	5-DS
Accidental Disconnect	√	√	√	√
Answer Buttons			N	√
Autodial Keys	√	√	E	√
• Number of Digits	16	16	24	24
• Store Facility Access			√	√
• Store Reach Through Codes			√	√
Automatic Line Selection	√	√	√	√
Automatic Set Relocation	√	E	√	√
• Programmable On/Off		√	√	√
Auxiliary ringing	√	√	E	√
• For lines in service modes			√	√
Background Music	√	√	√	√
Busy Lamp Indication	√	√	E	√
• On line pool key			√	√
Button Inquiry	√	√	E	√
• Examine autodial number			√	√
Call Display when busy	√	√	√	√
Call Duration timer	√	√	√	√
Call Forward	√	√	E	√
• All calls	√	√	√	√
• Call Forward Busy			√	√
• No Answer			√	√
• Override	√	√	√	√
Call Identification (Internal Calls)	√	√	√	√
Call Park		N	E	√
• Prefix Digit		1	0-9	0-9
• Time outs (30-600 sec.)			√	√
• With Callback		√	√	√

Compact 6x16 Features	DR1	DR2	DR5	5-DS
Call Pickup	√	E	E	√
• Directed			√	√
• Pickup Groups (4 groups)	√	√	√	√
• Trunk Answer From Any Station	√	√	√	√
Call Queuing			N	√
Camp On			N	√
Central Answering Position		√	E	√
• CAP feature and autodial only			N	√
• BLF indication		√	√	√
Class of Service			N	√
• COS Passwords			19	19
• Dialing Abilities			√	
CMS/CLASS Call Information Session			N	√
CMS/CLASS Caller Log			N-160 calls	60
CMS/CLASS Calling Name Display			N	√
CMS/CLASS Calling Number Display			N	√
CMS/CLASS LOGIT Feature			N	√
CMS/CLASS Long Distance Indicator			N	√
Conference	√	√	E	√
• Independently hold two calls		√	√	√
• Using Privacy			√	√
Custom Bus. Products Compatibility		N	√	√
Delayed Ring Transfer	√	E	√	√
• To prime	√	√	√	√
• After programmable # of rings		√	√	√
Dial "X" Set	√	E	E	√
• Direct Digit Dial	0	0	0-9	0-9
Dialing Modes	√	√	E	√
• Standard	√	√	√	√
• Automatic			√	√
• Predial			√	√

Compact 6x16 Features	DR1	DR2	DR5	5-DS
Dial Mode for Lines - pulse/tone	√	√	√	√
Dial Pad Feedback	√	√	√	√
Direct Station Select Buttons	√	√	√	√
Disconnect Supervision				N
Discriminating Ringing at Set	√	√	√	√
Distinctive Ringing Cadence	√	√	√	√
Do Not Disturb	√	√	√	√
End-to-End Signaling		N	√	√
• Short tones internal		√	√	√
External Line Access	√	√	√	√
Flexible Call Restrictions	√	E	N	√
(Restrictions on a per line basis)	Tables	Tables	Filters	Filters
• Dialing Filers (max)			25	25
• Dialing Filters on Lines (max)			255	25
• Filter Restrictions (max)			200	200
• Including System Speed Dial			√	√
Flexible Numbering Plan		N	√	√
Group Listening			N	√
Handsfree	√	√	E	√
• Automatic			√	√
Hold	√	E	√	√
• Held Line Reminder		√	√	√
Host Delay			N	√
Host System Signaling	√	√	E	√
• Feature code compression			√	√
• Pause, run/stop, timed release	√	√	√	√
• Programmed release			√	√
• Recall / Link	√	√	√	√
Hot Line			N	√
Installer Password		N	√	√
Intercom Key Assignment	√	√	√	√
Language Choice	√	√	√	√

Compact 6x16 Features	DR1	DR2	DR5	5-DS
Last Number Redial	√	√	E	√
• Number of Digits	16	16	24	24
• Selects Facility Used on Original Call			√	√
Line Button Relocation			N	√
Line Names		N	√	√
Line Pool(s)	√	E	√	√
Line Redirection				N
Line Types (Pool, Public, Private)	√	N	√	√
Link/Flash (Recall)	√	E	√	√
Listen On Hold	√	√	√	√
Long Tones				N
Loss Plan	√	√	√	√
Messages (Send, Waiting, Reply)		√	√	√
Multiple Line Appearances	√	√	√	√
Music/Tone/Silence On Hold	√	√	√	√
Night Service		E	E	√
• Flexible		√	√	√
• Service Modes			√	√
Onhook Dialing	√	√	E	√
• Automatic Dial			√	√
• Predial			√	√
• Standard	√	√	√	√
Paging	√	E	E	√
• Internal (Multiple Zones)		√	√	√
• Page Yes/No Per Set			√	√
Password Protection		N	√	√
Preselection/Call Screening	√	√	√	√
Prime Line Select	√	√	√	√
Prime Set(s)	√	E	√	√
• Multiple prime sets		√	√	√
Priority Call		N	√	√

Compact 6x16 Features	DR1	DR2	DR5	5-DS
Privacy	√	√	E	√
• On/Off			√	√
• Per Line			√	√
Ringing Line Preference	√	√	√	√
Receive Tones				N
Restriction Override Password(s)	√	E	√	√
Ring Again (Internal)	√	E	√	√
• On busy line pool		√	√	√
Saved Number Redial		N	E	√
• Number of Digits		16	24	√
Service Modes			N	
Speed Dial: Personal	√	E	E	√
• All sets supported		√	√	√
• Number of Digits		16	24	√
• Name Support			√	√
Speed Dial: System	√	E	E	√
• Number of Entries		70	√	√
• Number of Digits		16	24	√
• Name Support			√	√
System Version		√	√	√
Telephone Admin Lock			N	√
Time /Date Display	√	√	E	√
Transfer	√	E	E	√
• Immediate		√	Unified	Unified
• With announcement		√	Unified	Unified
• With Callback		√	√	√
• Unified (Immediate & announce)		√		
• Over Public Network			√	√
Unsupervised Conference				N
User programmable feature keys	√	√	√	√
Voice Call	√	√	√	√
Voice Call Deny	√	√	√	√

Upgrading from Compact DR2 to Compact DR5

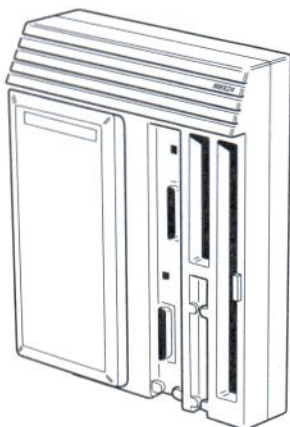
A Compact DR2 to DR5 upgrade requires the installation of a new DR5 software cartridge and reprogramming of the system, but no additional hardware.

To upgrade a customer so that they can access CMS/CLASS network features, a Compact Call Identification Interface (CII/C6) is required in addition to a DR5 software cartridge and programming.

Compact DR5 is compatible with all M7000 terminals, including M7100.

Norstar Modular 8X24 System

Modular 8X24 KSU



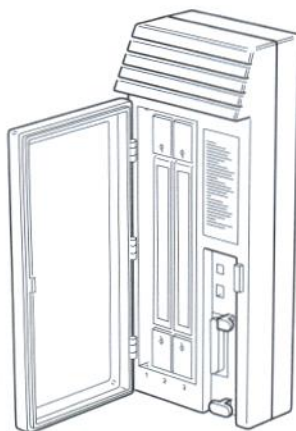
Length: 516 mm (20.3 in)
Width: 395 mm (15.5 in)
Depth: 171 mm (6.73 in)
Weight: 8.2 kg (18 lb)
Color: Dolphin Grey

- This system is designed on a module- and cartridge-based concept that offers easy installation, maintenance, expansion and customization.
- The base Modular 8X24 supports up to eight lines and 24 stations, but can be expanded with Trunk and Station Modules for additional lines and terminals.
- The Modular 8X24 can support up to 6 Trunk Modules each with a maximum of 12 CO lines, or 6 Station Modules each with 16 stations.
- When fully expanded, the Modular 8X24 system supports a combination of 128 ports on a combination of lines and stations, up to a maximum of 80 CO lines or 120 stations or combinations of the two. (See next page for acceptable configuration combinations.)
- The system can be configured as either analog CO lines, station ports or connections for other devices such as personal computers, data devices, analog terminal adapter, etc.

- There are two built-in cartridge slots in the base Modular 8X24 unit. The feature cartridge slot (the smaller of the two) houses the system software. The expansion cartridge slot (for a two- or six-port cartridge) is used to connect Trunk and Station Modules.
- Central Office lines enter the Norstar, and station ports exit the Norstar through two amphenol connectors.
- The Modular 8X24 is also equipped with two emergency transfer ports used to connect 500/2500 sets in the event of a power failure.

Note: The Modular 8X24 was market retired effective Feb. 20, 1997. At this time, Modular 8X24 Expansion Cartridge, Copper Station Modules and Copper Trunk Modules will not be market retired.

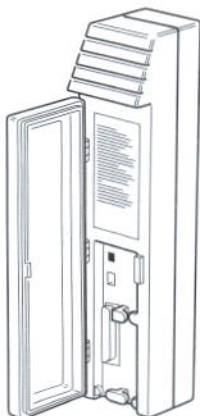
Copper Trunk Module (12x0)



Length: 625 mm (24.6 in)
Width: 198 mm (7.8 in)
Depth: 171 mm (6.73 in)
Weight: 5142 g (11.33 lb)
Color: Dolphin Grey

- Each Trunk Module (TM) holds up to three Trunk Cartridges (TC).
- Each Trunk Cartridge expands the base Modular 8X24 system or Modular ICS by four Central Office (CO) lines (four ports per cartridge) up to a maximum of 12 CO lines per Trunk Module. (Note: The E&M/DISA cartridge is an exception. It supports 2 ports/cartridge.)
- There is one emergency transfer port per Trunk Module.
- The Copper Trunk Module is compatible with the Modular ICS as well as the Modular 8X24.

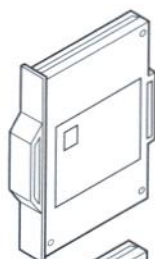
Copper Station Module (0x16)



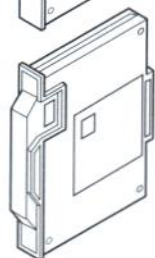
Length: 625 mm (24.6 in)
Width: 98 mm (3.85 in)
Depth: 171 mm (6.73 in)
Weight: 2415 g (5.31 lb)
Color: Dolphin Grey

- Each Station Module expands the base Modular 8X24 system or Modular ICS by up to 16 digital station ports which support any Norstar terminal.
- The Copper Station Module is compatible with the Modular ICS as well as the Modular 8X24.

Software Feature Cartridge



DR2 RAM only



ROM & RAM
(DR3, DR4, DR5,
Centrex,
Centrex+)

- The feature cartridge contains the system software for the Modular 8X24 operation, including the call processing, administration, and maintenance features and functions.
- Post DR2 feature cartridges come in two parts for faster, easier and less expensive upgrades.
 - The Read Only Memory (ROM) section houses system software and is easily replaced when upgrading.
 - The Random Access Memory (RAM) section stores customer data (features and functions you have access to) and remains unchanged.
- The Modular 8X24 System can operate on any of six software feature packages:
 - DR2 Feature Package with 90 standard features.
 - DR3 Feature Package with all DR2 features plus more than 20 additions and enhancements.
 - Centrex Feature Package with all DR3 features plus a special set of unique features that greatly simplify and enhance Centrex service.

- DR4 Feature Package with all DR3 features plus E&M type II TIE line, DID and other capabilities to satisfy customer needs for enhanced public and private networking.
- DR5 Feature Package with all DR4 features plus Calling Number/Name Display, Call Log and other CMS/CLASS related features.
- Centrex+ which is the Centrex Feature Package with DR5 features.

Note: Centrex + does not support E&M or DID trunking, Modular 8X24 Configuration Options.

Modular 8X24 Configuration Options

The possible configurations are shown in the following chart:

0 to 6 Trunk Modules	80x24						
	68x24	68x40					
	56x24	56x40	56x56				
	44x24	44x40	44x56	44x72			
	32x24	32x40	32x56	32x72	32x88		
	20x24	20x40	20x56	20x72	20x88	20x104	
	8x24	8x40	8x56	8x72	8x88	8x104	8x120
0 to 6 Station Modules							

Norstar Modular 8X24 Software Features

Key: √ Denotes availability, E - Denotes enhancements, N - Denotes new feature

Modular 8x24 Features	DR2	DR3	CTX	DR4	DR5	CTX+
Accidental Disconnect	√	√	√	√	√	√
Answer Buttons	√	√	√	√	√	√
Auto Answer				N	√	
Autodial Keys	√	E	√	√	√	√
Automatic Line Selection	√	√	√	√	√	√
Automatic Set Relocation	E	√	√	√	√	√
Auxiliary Ringing	√	E	√	√	√	√
Background Music	√	√	√	√	√	√
Busy Lamp Indication	√	√	√	√	√	√
Button Inquiry	√	E	√	√	√	√
Call Display when busy	√	√	√	√	√	√
Call Duration timer	√	√	√	√	√	√
Call Forward All Calls	√	√	E	√	√	√
Call Forward No Answer	√	√	E	√	√	√
Call Forward On Busy		N	E	√	√	√
Call Forward Override	√	√	E	√	√	√
Call Identification (Internal Calls)	√	√	√	√	√	√
Call Park	√	√	√	E	√	√
• Prefix Digits				√	√	E
Call Pickup	E	√	E	√	√	√
• Directed	√	√	√	√	√	√
• Group			√	√	√	√
Call Queuing		N	√	√	√	√
Camp On (Call Waiting)		N	√	√	√	√
Class of Service				N	√	√
CMS/CLASS Call Info Session					N	√
CMS/CLASS Call Log					N-600 calls	√
CMS/CLASS LOGIT (Call Logging)					N	√
CMS/CLASS Long Distance Indic.					N	√

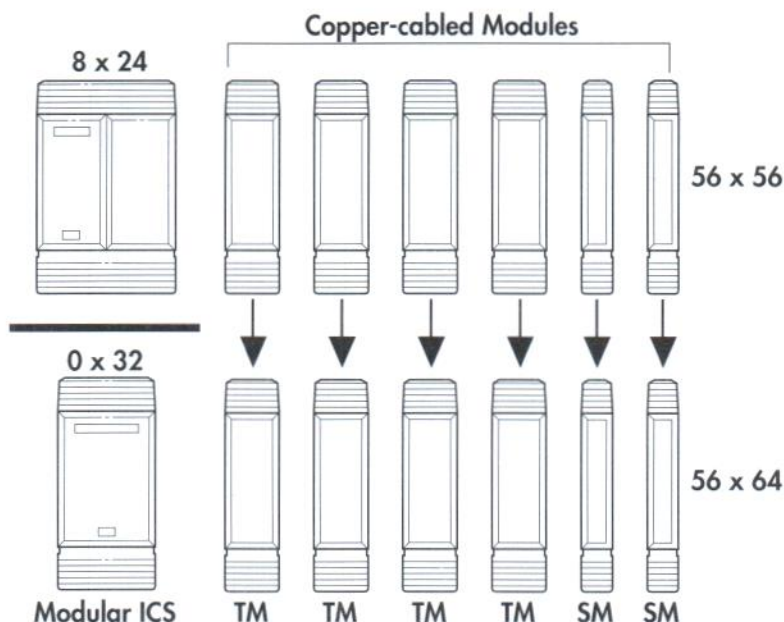
Modular 8x24 Features	DR2	DR3	CTX	DR4	DR5	CTX+
CMS/CLASS Name Display					N	√
CMS/CLASS Number Display					N	√
Conference	√	√	E	E	√	
Custom Business Product Compatibility	√	√	√	√	√	√
Delayed Ring Transfer	E	√	√	√	√	√
Dial "0" Station (see also direct dial)	E	E	√	E	√	√
Dialing Modes		N	√	√	√	√
• Automatic		√	√	√	√	√
• Predial		√	√	√	√	√
Dialing Filters				N	√	
Direct Dial (see also Dial "0" station)	√	√	√	E	√	E
• Attendant Digit				N	√	√
• Multiple Attendants				N	√	√
Direct Station Select buttons	√	√	√	√	√	√
DISA (Direct Inward System Access)				N	√	
Disconnect Supervision		N	√	√	√	√
Discriminating Ringing at Set	√	√	√	√	√	√
Distinctive Ringing at Set	√	√	√	√	√	√
End to End Signaling	√	E	√	√	√	√
• Long tones—External	√	√	√	√	√	√
• Long tones—Internal	√	√	√	√	√	√
• Long tones—External paging port		√	√	√	√	√
• Short tones—External	√	√	√	√	√	√
• Short tones—Internal	√	√	√	√	√	√
Enhanced Trunking Connectivity with E&M and DID				N	√	
Flexible Call Restrictions & Override	E	E	√	E	√	√
Group Listening		N	√	√	√	√
Handsfree	√	E	√	√	√	√
• Automatic		√	√	√	√	√
Hold	√	√	E	√	√	√

Modular 8x24 Features	DR2	DR3	CTX	DR4	DR5	CTX+
Hot Line		N	√	√	√	√
Installer Password	√	√	√	√	√	√
Host System Signaling	E	E	E	√	√	√
• Feature code compression		√	√	√	√	√
• Recall/ Link	√	√	√	√	√	√
• Pause, run/stop, timed release	√	√	√	√	√	√
• Programmed Release		√	√	√	√	√
Language Choice	√	√	√	√	√	√
Last Number Redial	√	√	√	√	√	√
Line Redirection				N	*	
Line Button Relocation		N	√	√	√	√
Line Profile	√	√	√	√	√	√
Line Pool(s)	E	E	√	E	√	E
• Busy Status		√	√	√	√	√
Long Tones	√	E	√	√	√	√
Maintenance Alarms	√	√	√	√	√	√
Make Set Busy (Do Not Disturb)	√	√	E	√	√	√
Night Service - Service Modes	E	E	√	√	√	√
Onhook Dialing	√	E	√	√	√	√
Paging	E	E	√	√	E	E
• External	√	√	√	√	√	√
• Y/N on a Per Set Basis					N	N
Priority Call (Executive Busy Override)	√	√	E	√	√	√
Privacy Control		N	√	√	√	√
Ring Again	E	√	E	√	√	√
• On Busy Set	√	√	√	√	√	√
• On Busy Line Pool	√	√	√	√	√	√
• On No Answer (Internal)	√	√	√	√	√	√
Saved Number Redial	√	E	√	√	√	√
Set Profile	√	√	√	√	√	√
Speed Dial: Personal	√	E	√	√	√	√

Modular 8x24 Features	DR2	DR3	CTX	DR4	DR5	CTX+
• Bypass Restrictions		√	√	√	√	√
• Line Selection		√	√	√	√	√
• Names		√	√	√	√	√
Speed Dial: System	E	E	√	√	√	√
• Bypass Restrictions		√	√	√	√	√
• Line Selection		√	√	√	√	√
• Names		√	√	√	√	√
Target Lines				N	√	
Telephone Admin Lock		N	√	√	√	√
Time/Date Display	√	E	√	√	√	√
• Show Time		√	√	√	√	√
Transfer	E	√	E	E	E	E
• Immediate (Callback)	√	√	√	√	√	√
• Over Public Network				√	√	
• With Announcement	√	√	√	√	√	√
Unsupervised Conference				N	√	
• Voice Call	√	√	√	√	√	√
Voice Call Deny	√	√	√	√	√	√

Upgrades from Modular 8X24 to Modular ICS

Analog to Analog 8X24 to Modular ICS upgrade (no T1)



This upgrade shows an analog to analog conversion. All existing Trunk and Station Modules will be carried forward.

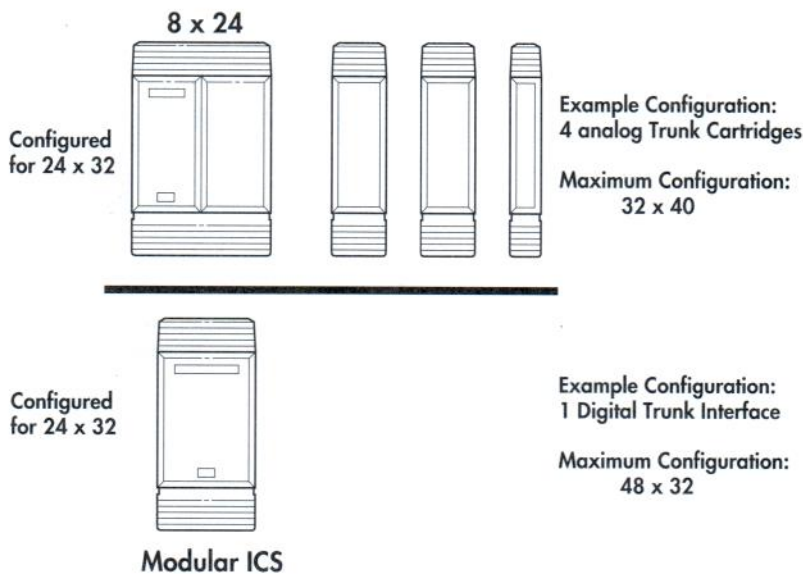
Because no T1 is implemented, the core ICS will support the same 8 trunks as on the 8X24.

The increase in this scenario is the additional 8 station ports on the core unit.

Items to be ordered to complete this upgrade are:

- 1 Modular ICS core
- 1 Software Feature Cartridge
- 1 MICS Copper 6-port Expansion Cartridge
- 2 Trunk Cartridges (either CI or LS/DS) dependent upon customer requirement

Analog to Digital 8X24 to Modular ICS upgrade with T1



This upgrade shows how much equipment is needed when upgrading to an ICS with T1.

Because the ICS offers an increase of 8 station ports on the core unit, the additional Station Module is no longer needed.

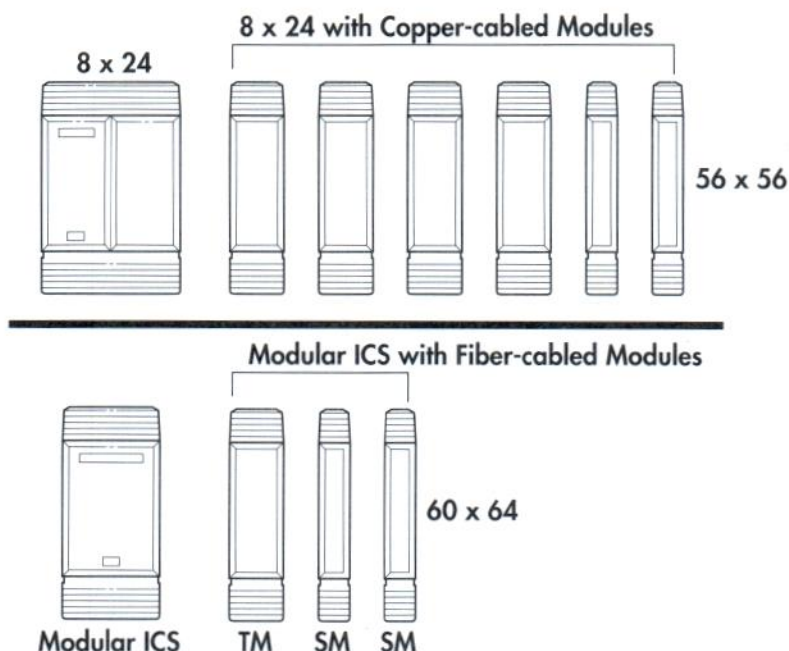
Also, with T1 connectivity, the core ICS will support up to 48 trunks, alleviating the need for the 2 additional trunk modules.

This upgrade streamlines the equipment requirements while providing increased functionality.

Items to be ordered to complete this upgrade are:

- 1 Modular ICS core
- 1 Software Feature Cartridge
- 1 DTI Cartridge (24 trunks)
- 1 Services Cartridge

See Chapter 2 for information about Modular ICS with ISDN BRI functionality.

Analog to Mixed Digital/Analog 8X24 to Modular ICS upgrade with T1, TMs and SMs

This last scenario shows a mixed analog/digital upgrade.

The 8x24 will support 8 trunks only. The 4 Trunk Modules must support the additional 48 trunks for a total of 56 trunks.

Because of the new mixed configuration capability, the core Modular ICS can support 48 digital trunks (2 T1 trunks). One Fiber Trunk Module will support 8 additional analog trunks for a total of 56. In fact, the Fiber Trunk Module can grow another 4 trunks for a total of 60 trunks.

The core Modular ICS supports 32 stations. Two Fiber Station Modules support the additional 32 stations, for a total of 64 stations.

Therefore, the Modular ICS with only 1 Fiber Trunk Module and 2 Fiber Station Modules will deliver more capacity than the Modular 8x24 with 4 Copper Trunk Modules and 2 Copper Station Modules.

Items to be ordered in this upgrade are:

- 1 Modular ICS core
- 1 Software Feature Cartridge
- 2 DTI Cartridges (24 trunks each)
- 1 Services Cartridge
- 1 6-port Fiber Expansion Cartridge
- 1 Fiber Trunk Module
- 2 Fiber Station Modules

The existing Analog Trunk Cartridges can be used in the Fiber Trunk Module. All telephone sets can be carried forward.

See Chapter 2 for information about Modular ICS with ISDN BRI functionality.

Modular 8X24 Cartridges

- Expansion Cartridges provide the connection point for expansion of the system via trunk or station modules.
- Services Cartridges contain the clocking services to support T1.
- Trunk Cartridges connect the Norstar system with the central office.

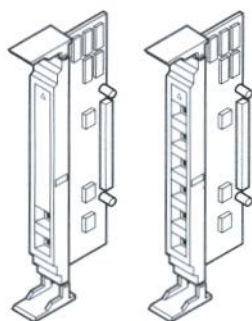
Norstar Module/Cartridge Compatibility

Cartridges	Modular 8X24	
	KSU	Copper Trunk Module
8X24 Copper Expansion 2-port	√	
8X24 Copper Expansion 6-port	√	
LS/DS Analog Trunk (with Disconnect Supervision)*		√
Caller ID Trunk Cartridge*		√
E&M/DISA Trunk Cartridge**		√
DID Trunk Cartridge**		√
1A2 Trunk Cartridge**		√

* Compatible with Modular ICS core and Trunk Modules.

** Compatible with Modular ICS Trunk Modules only.

Modular 8X24 Copper Expansion Cartridge



2-port Copper 6-port Copper

Description

- Two- or six-port Copper Expansion Cartridges connect additional Trunk or Station Modules to expand base system capacity of the Modular 8X24.
- Compatible with the core 8X24 KSU only.

Appendix B:

Norstar Compatibility Matrix

This Compatibility Matrix is intended for reference purposes only. Please consult your local technical source for detailed specifications and ordering information.

Norstar Compatibility Matix

	Norstar telephones				Norstar portables			Analog Terminal Adapters			CI Interface	
	M7100	M7208	M7310	M7324	C3020	C3050	M7410 cordless ³	ATA	EATA	EATA2	CII 6	CII 8
Norstar 3x8 DR1	No	Yes	Yes	No	No ¹	No ¹	Yes	Yes	Yes	Yes	No	No
Norstar 3x8 DR5	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	No	No
Norstar 3x8 DR5.1	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	No	No
Compact 6x16 DR1	No	Yes	Yes	No	No ¹	No ¹	Yes	Yes	Yes	Yes	No	No
Compact 6x16 DR2	No	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	No	No
Compact 6x16 DR5	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	Yes	Yes
Compact 6x16 DR5 DS	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	Yes	Yes
Compact 6x16 DR5.1	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	Yes	Yes
Compact 6x16 DR5.1 DS	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	Yes	Yes
Modular 8x24 DR1	No	Yes	Yes	No	No ¹	No ¹	Yes	Yes	Yes	Yes	No	No
Modular 8x24 DR2	No	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	No	No
Modular 8x24 DR3	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	No	No
Modular 8x24 DR3 CTX	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	No	No
Modular 8x24 DR4	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	No	No

	Norstar telephones				Norstar portables			Analog Terminal Adapters			CI Interface	
	M7100	M7208	M7310	M7324	C3020	C3050	M7410 cordless ³	ATA	EATA	EATA2	CII 6	CII 8
Modular 8x24 DR5	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	No	Yes
Modular 8x24 DR5 CTX	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	No	Yes
Modular 8x24 DR5.1	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	Yes	Yes	Yes	No	Yes
Modular ICS Rls1 T1 & T1 CTX	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	No ²	Yes	Yes	No	No
Modular ICS CDA XC 1.0	Yes	Yes	Yes	Yes	Yes ⁴	Yes	Yes	No ²	Yes	Yes	No	No
Modular ICS USA XL 1.0	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	No ²	Yes	Yes	No	No
Modular ICS USA XC 1.0	Yes	Yes	Yes	Yes	No ⁴	Yes	Yes	No ²	Yes	Yes	No	No
Modular ICS NA DR 1.1	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	No ²	Yes	Yes	No	No
Modular ICS CDA/USA XC1.1	Yes	Yes	Yes	Yes	Yes ⁴	Yes	Yes	No ²	Yes	Yes	No	No
Modular ICS NA DR 2.0	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	No ²	Yes	Yes	No	No
Modular ICS CDA XC 2.0	Yes	Yes	Yes	Yes	Yes ⁴	Yes	Yes	No ²	Yes	Yes	No	No
Modular ICS USA XC 2.0	Yes	Yes	Yes	Yes	No ¹	Yes	Yes	No ²	Yes	Yes	No	No
Compact ICS 1.0	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	No ²	Yes	Yes	No	No
Compact ICS 2.0	Yes	Yes	Yes	Yes	No ¹	No ¹	Yes	No ²	Yes	Yes	No	No

Note 1: Companion on Norstar requires the XC software stream on the MICS platform. Companion C200 Adjunct may be used for earlier versions, and for CICS platform.

Note 2: Limited functionality possible.

Note 3: Available Q1, 1998.

Note 4: All new sales of Companion handsets are C3050. C3020, introduced in Canada only, is no longer available.

Norstar Compatibility Matrix

	PCI-B	DCI	Norstar Manager				NRU 1.0		NRU 2.0		NRU 4.0 ¹	
			1	2	3	3.1	Norstar Mgr 3.2	Remote Set ²	Norstar Mgr 3.3	Remote Set ²	Norstar Mgr 3.4	Remote Tools ^{2,7}
Norstar 3x8 DR1	Yes	Yes	No	No	No	No	No	No	No	No	No	No
Norstar 3x8 DR5	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ³	Yes ⁵
Norstar 3x8 DR5.1	Yes	No	Yes ⁴	Yes ⁴	Yes ⁴	Yes ⁴	Yes ⁴	Yes	Yes ⁴	Yes	Yes ³	Yes ⁵
Compact 6x16 DR1	Yes	Yes	No	No	No	No	No	No	No	No	No	No
Compact 6x16 DR2 ⁶	Yes	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes ⁵
Compact 6x16 DR5	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ³	Yes ⁵
Compact 6x16 DR5-DS	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁵
Compact 6x16 DR5.1	Yes	No	Yes ⁴	Yes ⁴	Yes ⁴	Yes ⁴	Yes ⁴	Yes	Yes ⁴	Yes	Yes	Yes ⁵
Compact 6x16 DR5.1-DS	Yes	No	Yes ⁴	Yes ⁴	Yes ⁴	Yes ⁴	Yes ⁴	Yes	Yes ⁴	Yes	Yes	Yes ⁵
Modular 8x24 DR1	Yes	Yes	No	No	No	No	No	No	No	No	No	No
Modular 8x24 DR2 ⁶	Yes	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes ⁵
Modular 8x24 DR3 ⁶	Yes	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes ⁵
Modular 8x24 DR3 CTX ⁶	Yes	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes ⁵
Modular 8x24 DR4	Yes	No	No	No	No	No	No	Yes	No	Yes	No	Yes ⁵
Modular 8x24 DR5	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ³	Yes
Modular 8x24 DR5 CTX (DR CTX+)	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	PCI-B	DCI	Norstar Manager				NRU 1.0		NRU 2.0		NRU 4.0 ¹	
			1	2	3	3.1	Norstar Mgr 3.2	Remote Set ²	Norstar Mgr 3.3	Remote Set ²	Norstar Mgr 3.4	Remote Tools ^{2,7}
Modular 8x24 DR5.1	Yes	No	Yes ⁴	Yes ⁴	Yes ⁴	Yes ⁴	Yes ⁴	Yes	Yes ⁴	Yes	Yes	Yes
Modular ICS Rls 1 T1 (also NA R1T1)	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS Rls 1 CTX (also NA R1 CTX)	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS CDA XC 1.0	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS USA XL 1.0	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS USA XC 1.0	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS NA DR 1.1 (replaces NA R1T1)	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes ⁵
Modular ICS CDA XC 1.1	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes ⁵
Modular ICS USA XC 1.1	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes ⁵
Modular ICS NA DR 2.0	Yes	No	No	No	No	No	No	Yes	No	Yes	No	Yes
Modular ICS CDA XC 2.0	Yes	No	No	No	No	No	No	Yes	No	Yes	No	Yes
Modular ICS USA XC 2.0	Yes	No	No	No	No	No	No	Yes	No	Yes	No	Yes
Compact ICS 1.0	Yes	No	No	No	No	No	No	Yes	No	Yes	No	Yes ⁵
Compact ICS 2.0	Yes	No	No	No	No	No	No	Yes	No	Yes	No	Yes

Note 1: Available in 1998. NRU 4.0 Remote Tools includes: Remote Set, Backup & Restore, and Browser.

Note 2: Requires RAD2 or Fast RAD. FastRAD provides faster performance, particularly when working with Remote Tools such as Backup&Restore.

Note 3: Software purchased after July 1, 1993

Note 4: Can administer DR5 features only. Cannot administer features added with DR 5.1.

Note 5: Remote Set only.

Note 6: Compatible with DOS version of Norstar Manager, using RAD, RAD2 or FastRAD.

Note 7: NRU 4.0 Remote Tools includes: Remote Set, Backup & Restore, and Browser.

Norstar Compatibility Matrix

Norstar Handbook

Issue 5.0

Nov-97

	Station Message Detail Recorder					CTA			MINUET ACD 1.0 Note 1	PRELUDE, CINPHONY 1&2 ACD ³		
	1	2	3	4	5	100	150i	500dm		2.00.13	2.00.15	2.00.18 2.00.19
Norstar 3x8 DR1	Yes	Yes	No	No	No	No	No	No	No	No	No	No
Norstar 3x8 DR5	No	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Norstar 3x8 DR5.1	No	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Compact 6x16 DR1	Yes	Yes	No	No	No	No	No	No	No	No	No	No
Compact 6x16 DR2	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No
Compact 6x16 DR5	No	No	Yes	Yes	Yes	Yes ²	Yes ²	No	No	No	No	No
Compact 6x16 DR5 DS	No	No	Yes	Yes	Yes	Yes ²	Yes ²	No	Yes	Yes ²	Yes ²	Yes ²
Compact 6x16 DR5.1	No	No	Yes	Yes	Yes	Yes ²	Yes ²	No	No	No	No	No
Compact 6x16 DR5.1 DS	No	No	Yes	Yes	Yes	Yes ²	Yes ²	No	Yes	Yes	Yes	Yes
Modular 8x24 DR1	Yes	No	No	No	No	No	No	No	No	No	No	No
Modular 8x24 DR2	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No
Modular 8x24 DR3	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No
Modular 8x24 DR3 CTX	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No
Modular 8x24 DR4	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No
Modular 8x24 DR5	No	No	Yes	Yes	Yes	Yes ²	Yes ²	No	Yes	Yes ²	Yes ²	Yes ²
Modular 8x24 DR5 CTX	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes ²	Yes ²	Yes ²
Modular 8x24 DR5.1	No	No	Yes	Yes	Yes	Yes ²	Yes ²	No	Yes	Yes	Yes	Yes
Modular ICS RIs1 T1 & T1 CTX	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes

	Station Message Detail Recorder					CTA			MINUET ACD 1.0 Note 1	PRELUDE, CINPHONY 1&2 ACD ³		
	1	2	3	4	5	100	150i	500dm		2.00.13	2.00.15	2.00.18 2.00.19
Modular ICS CDA XC 1.0	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Modular ICS USA XL 1.0	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Modular ICS USA XC 1.0	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Modular ICS NA DR 1.1	No	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Modular ICS CDA/USA XC1.1	No	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Modular ICS NA DR 2.0	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Modular ICS CDA XC 2.0	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Modular ICS USA XC 2.0	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Compact ICS 1.0	No	No	No	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Compact ICS 2.0	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes

Note 1: MINUET ACD requires Norstar Voice Mail 3.0 or Integrated Voice Response 1.0. Disconnect Supervision required in all cases.

Note 2: Minimum versions of DR5 required to support Norstar Voice Mail, StarTalk FLASH, IVR, CTA 100 and CTA 150i are:

for 3 x8: NT5B05CJ Rls 01A (English/French), NT5B05DA Rls 01C (English/Spanish)
for 6x16: NT5B10CF Rls 02 (English/French), NT5B10DF Rls 02 (English/Spanish)
for 6x16 DS: NT5B10CE Rls 04 (English/French), NT5B10DE Rls 04 (English/Spanish)
for 8x24: NT5B24CH Rls 04 (English/French), NT5B24DH Rls 04 (English/Spanish)
for 8x24 CTX: NT5B29CE Rls 02 (English/French), NT5B29DD Rls 02 (English/Spanish).

Note 3: The minimum version of software to support Norstar ACD is:

for 6x16 DS: NT5B10CE Rls 04 (English/French), NT5B10DE Rls 04 (English/Spanish)
for 8x24: NT5B24CH Rls 04 (English/French), NT5B24DH Rls 04 (English/Spanish)
for 8x24 CTX: NT5B29CE Rls 02 (English/French), NT5B29DD Rls 02 (English/Spanish).

Norstar Compatibility Matrix

	Remote Access Device			VMI	StarTalk	StarTalk Mini		StarTalk FLASH				IVR
	RAD ¹	RAD 2 ^{2,3}	FastRAD ²		2.04L ⁴	2.5	2.6	1.36 <	1.44	1.46	1.5	1.0
Norstar 3x8 DR1	No	No	No	No	No	No	No	No	No	No	No	No
Norstar 3x8 DR5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵
Norstar 3x8 DR5.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁵
Compact 6x16 DR1	No	No	No	No	No	No	No	No	No	No	No	No
Compact 6x16 DR2	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No	No	No
Compact 6x16 DR5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵
Compact 6x16 DR5 DS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵
Compact 6x16 DR5.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁵
Compact 6x16 DR5.1 DS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Modular 8x24 DR1	No	No	No	No	No	No	No	No	No	No	No	No
Modular 8x24 DR2	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No	No	No
Modular 8x24 DR3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Modular 8x24 DR3 CTX	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Modular 8x24 DR4	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Modular 8x24 DR5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵
Modular 8x24 DR5 CTX (DR CTX+)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵	Yes ⁵
Modular 8x24 DR5.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁵
Modular ICS RIs T1 (also NA RIT1)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes

	Remote Access Device			VMI	StarTalk	StarTalk Mini		StarTalk FLASH				IVR
	RAD ¹	RAD 2 ^{2,3}	FastRAD ²		2.04L ⁴	2.5	2.6	1.36 <	1.44	1.46	1.5	1.0
Modular ICS Rls 1 CTX (also NA R1 CTX)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS CDA XC 1.0	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes
Modular ICS USA XL 1.0	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes
Modular ICS USA XC 1.0	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes
Modular ICS NA DR 1.1	Yes ⁷	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes
Modular ICS CDA XC1.1	Yes ⁷	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes
Modular ICS USA XC1.1	Yes ⁷	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes
Modular ICS NA DR 2.0	No	Yes ⁶	Yes ⁶	Yes	No	No	No	No	No	No	Yes	Yes
Modular ICS CDA XC 2.0	No	Yes ⁶	Yes ⁶	Yes	No	No	No	No	No	No	Yes	Yes
Modular ICS USA XC 2.0	No	Yes ⁶	Yes ⁶	Yes	No	No	No	No	No	No	Yes	Yes
Compact ICS 1.0	No	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes
Compact ICS 2.0	No	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes

Note 1: RAD is compatible with all Norstar Manager but not Remote Set or Remote Tools.

Note 2: RAD 2 and FastRAD are compatible with Norstar Manager, and Remote Tools (which includes Remote Set). FastRAD provides faster performance, particularly when working with Remote Tools such as Backup&Restore.

Note 3: RAD manufactured April 1996 or later.

Note 4: For customers with StarTalk Versions 1.5, 1.6, 2.0, 2.01a, 2.02, 2.03, and 2.04l, there is a free upgrade package to Version 2.04L.

Note 5: Minimum versions of DR5 required to support Norstar Voice Mail, StarTalk FLASH, IVR, CTA 100 and CTA 150i are:

for 3x8: NT5B05CJ Rls 01A (English/French), NT5B05DA Rls 01C (English/Spanish)
for 6x16: NT5B10CF Rls 02 (English/French), NT5B10DF Rls 02 (English/Spanish)
for 6x16 DS: NT5B10CE Rls 04 (English/French), NT5B10DE Rls 04 (English/Spanish)
for 8x24: NT5B24CH Rls 04 (English/French), NT5B24DH Rls 04 (English/Spanish)
for 8x24 CTX: NT5B29CE Rls 02 (English/French), NT5B29DD Rls 02 (English/Spanish)

Note 6: Remote Set and Remote Tools only.

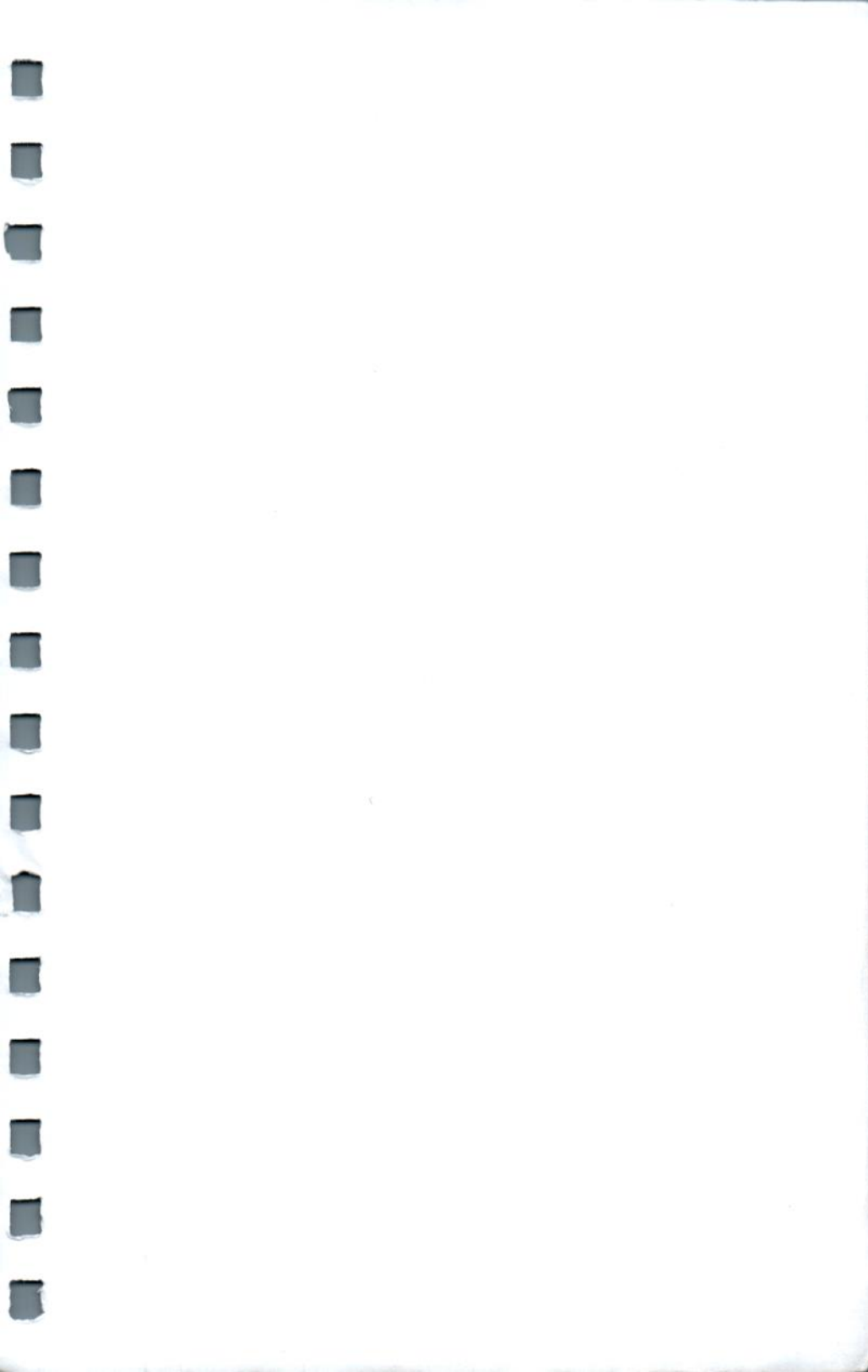
Note 7: Norstar Manager 3.3 and later.

Norstar Compatibility Matrix

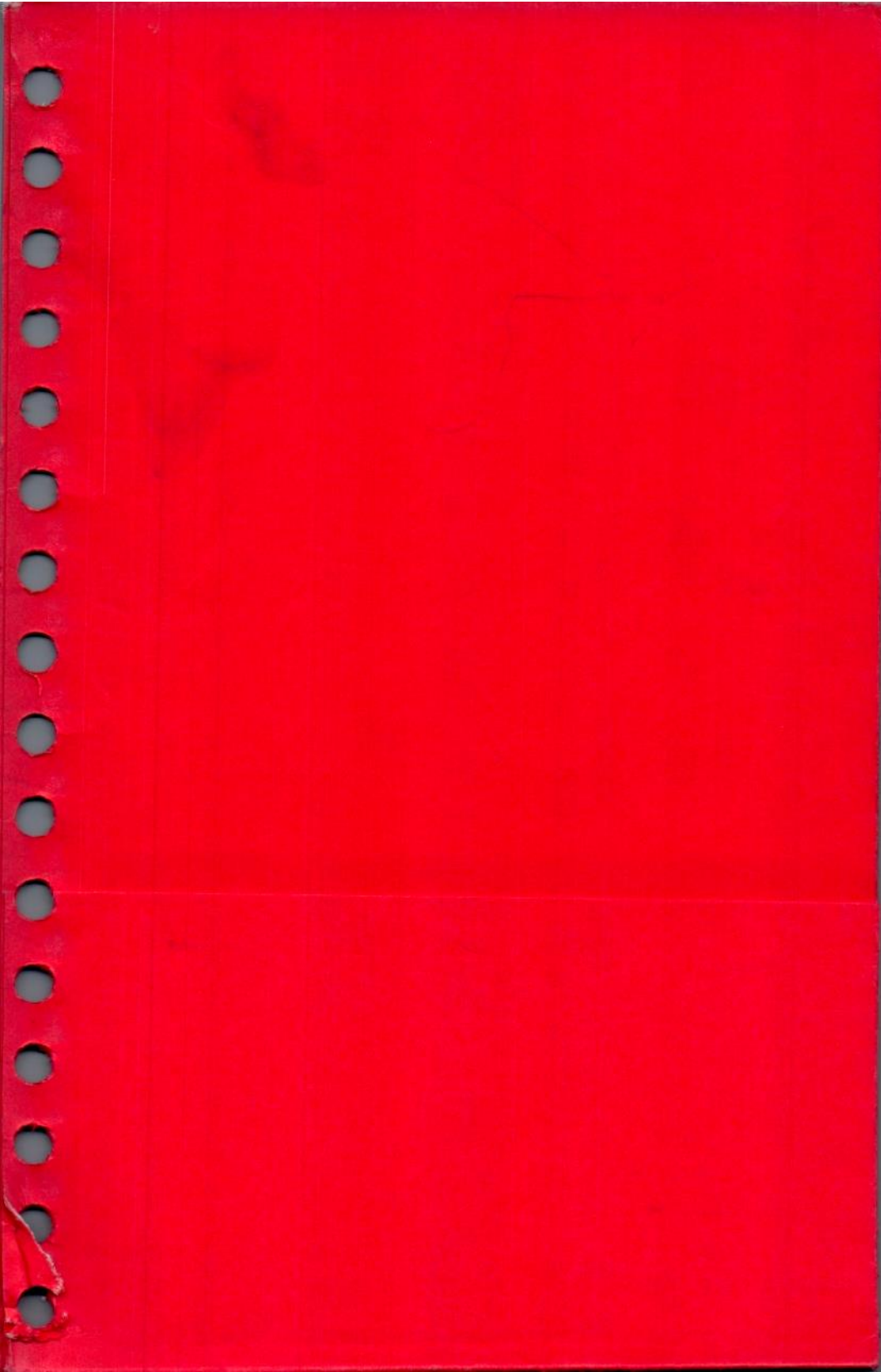
	Norstar Voice Mail						
	1.0	1.1	1.2	1.3	2.0	2.1	3.0
Norstar 3x8 DR1	No	No	No	No	No	No	No
Norstar 3x8 DR5	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹
Norstar 3x8 DR5.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Compact 6x16 DR1	No	No	No	No	No	No	No
Compact 6x16 DR2	No	No	No	No	No	No	No
Compact 6x16 DR5	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹
Compact 6x16 DR5 DS	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹
Compact 6x16 DR5.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Compact 6x16 DR5.1 DS	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Modular 8x24 DR1	No	No	No	No	No	No	No
Modular 8x24 DR2	No	No	No	No	No	No	No
Modular 8x24 DR3	No	No	No	No	No	No	No
Modular 8x24 DR3 CTX	No	No	No	No	No	No	No
Modular 8x24 DR4	No	No	No	No	No	No	No
Modular 8x24 DR5	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹

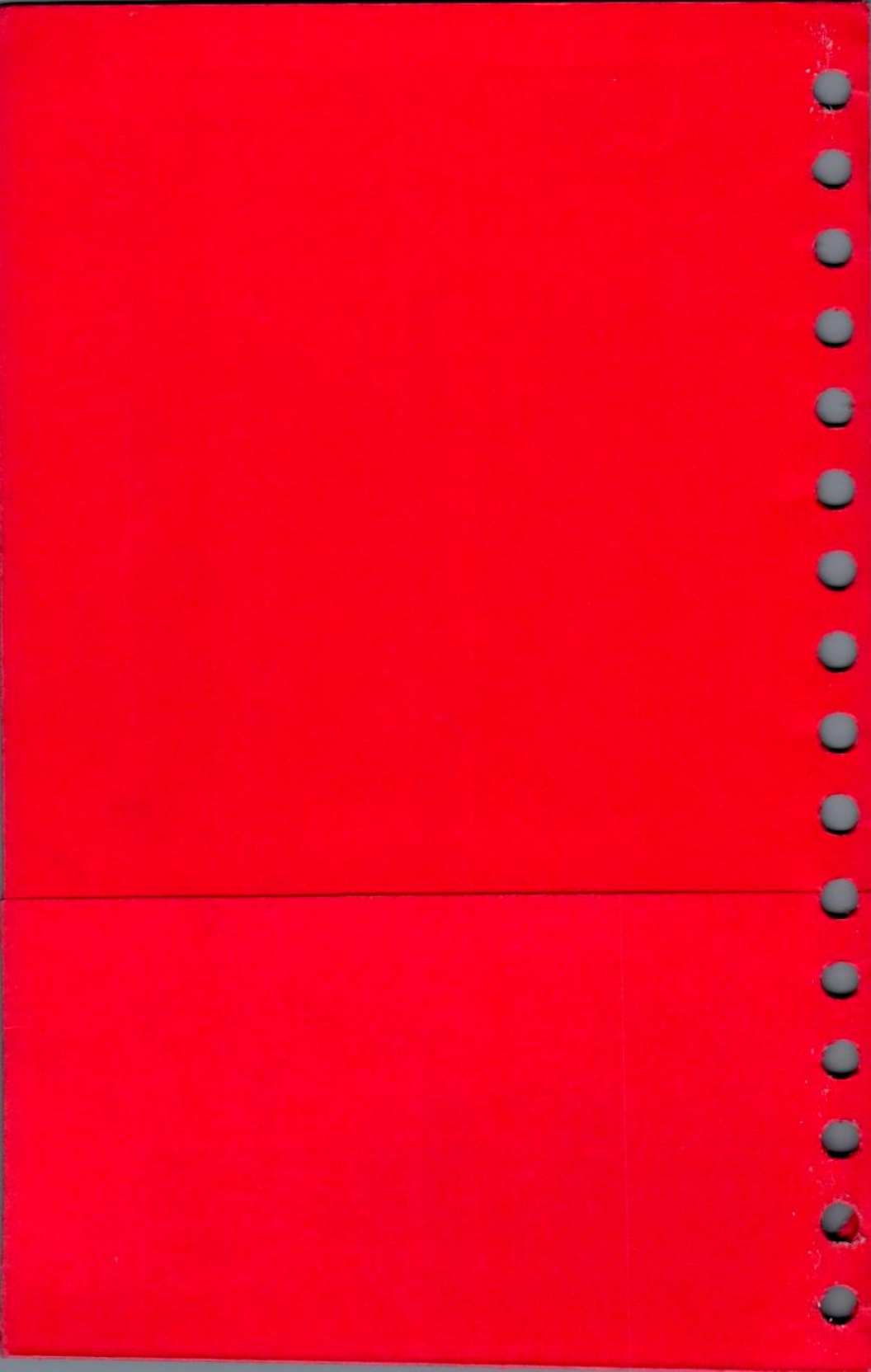
	Norstar Voice Mail						
	1.0	1.1	1.2	1.3	2.0	2.1	3.0
Modular 8x24 DR5 CTX	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes ¹
Modular 8x24 DR5.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS Rls 1 T1 & T1 CTX	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS CDA XC 1.0	No	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS USA XL 1.0	No	Yes	Yes	Yes	Yes	Yes	Yes
Modular ICS USA XC 1.0	No	No	No	Yes	Yes	Yes	Yes
Modular ICS NA DR 1.1	No	No	No	No	Yes	Yes	Yes
Modular ICS CDA/USA XC1.1	No	No	No	No	Yes	Yes	Yes
Modular ICS NA DR 2.0	No	No	No	No	No	Yes	Yes
Modular ICS CDA XC 2.0	No	No	No	No	No	Yes	Yes
Modular ICS USA XC 2.0	No	No	No	No	No	Yes	Yes
Compact ICS 1.0	No	No	No	No	Yes	Yes	Yes
Compact ICS 2.0	No	No	No	No	No	Yes	Yes

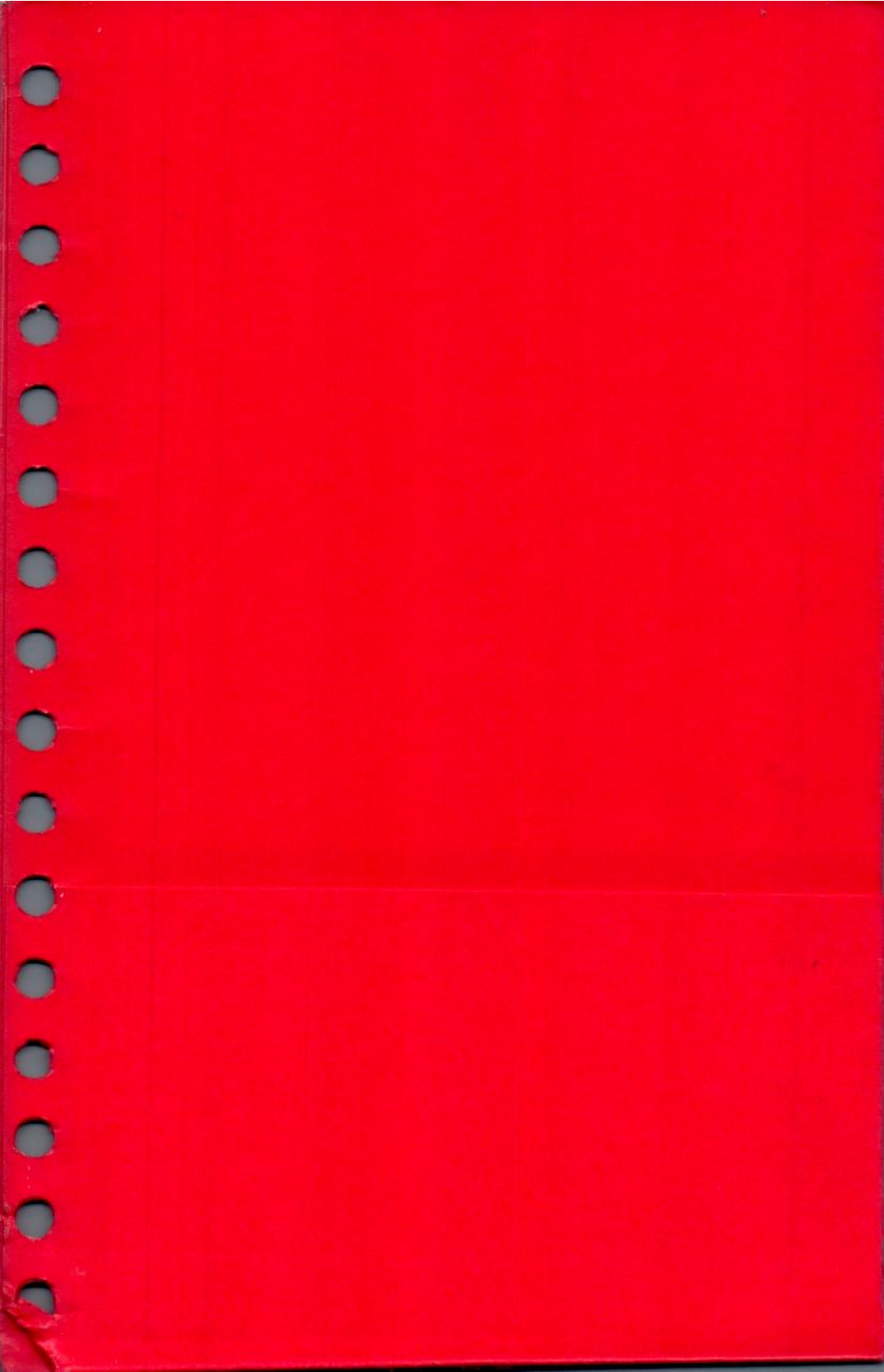
Note 1: Minimum versions of DR5 required to support Norstar Voice Mail, StarTalk FLASH, IVR, CTI 100 and CTI 150i are:
 for 3 x8: NT5B05CJ Rls 01A (English/French), NT5B05DA Rls 01C (English/Spanish)
 for 6x16: NT5B10CF Rls 02 (English/French), NT5B10DF Rls 02 (English/Spanish)
 for 6x16 DS: NT5B10CE Rls 04 (English/French), NT5B10DE Rls 04 (English/Spanish)
 for 8x24: NT5B24CH Rls 04 (English/French), NT5B24DH Rls 04 (English/Spanish)
 for 8x24 CTX: NT5B29CE Rls 02 (English/French), NT5B29DD Rls 02 (English/Spanish)

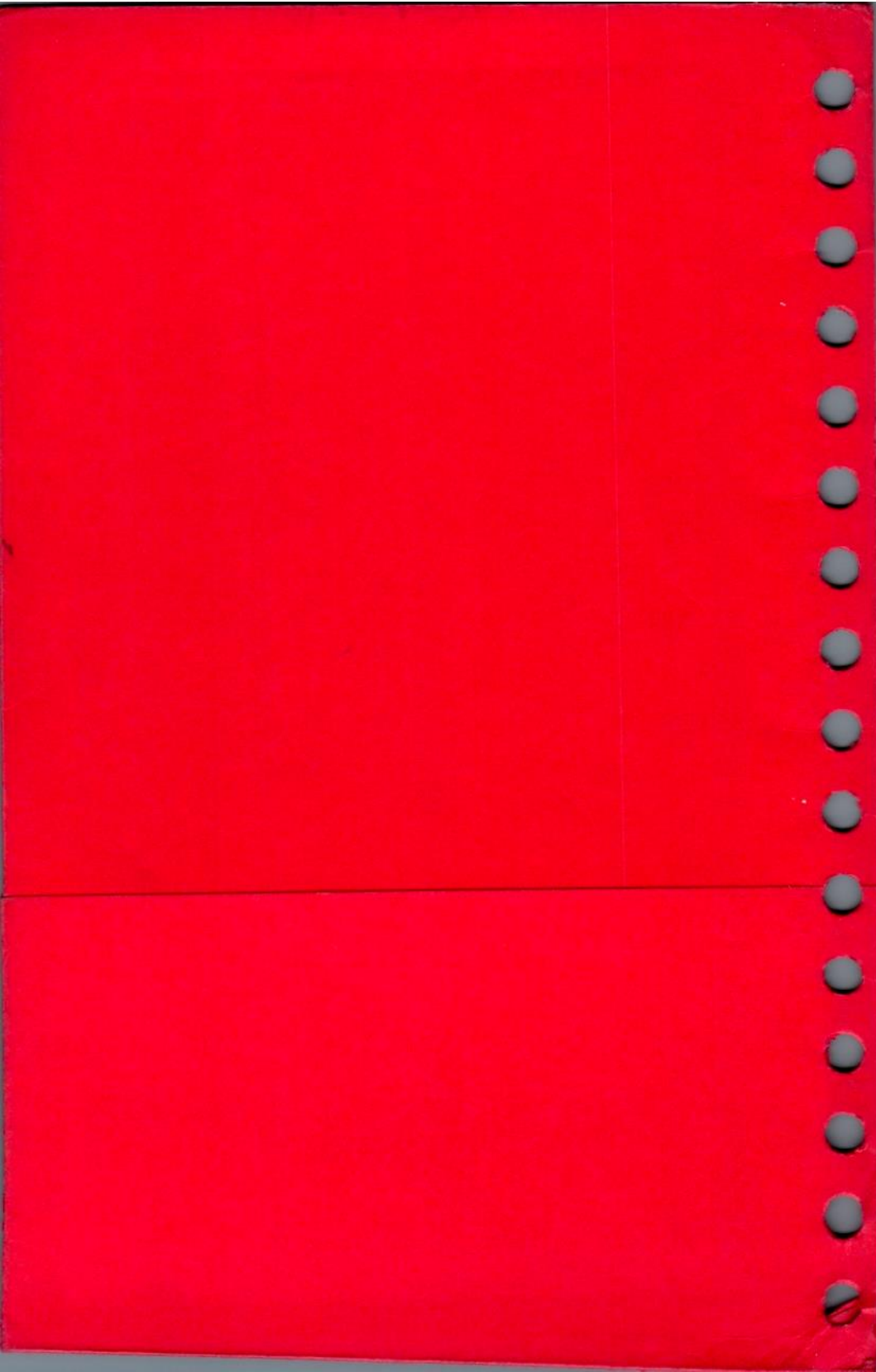


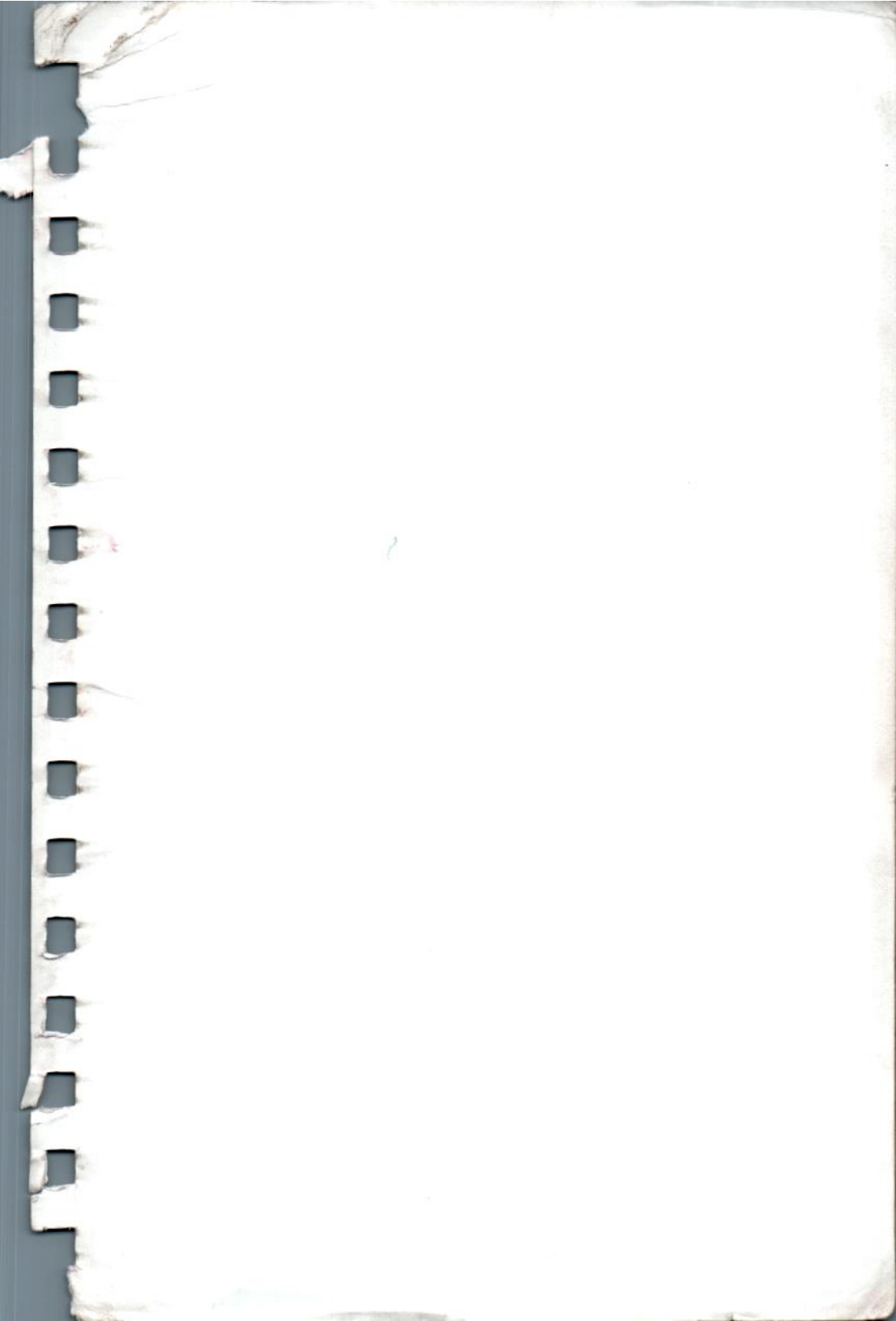












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